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INTRODUCTION

The fast-paced evolution of technology poses numerous educational challenges. Teachers must continually learn how to use new technologies while simultaneously integrating them into their classrooms. This document is intended to assist teachers with the visioning process and spark their creative integration ideas.

There are natural points where technology can enhance and enrich content or transform the learning experience into an interactive, student-driven lesson. This document highlights these natural points, illustrating how technology can be incorporated into the Virginia Standards of Learning (SOL) core curricular subjects for each middle school grade. Note that this is merely a starting point and not an exhaustive list of potential integration points or techniques.

The examples pertain to a wide range of technology expertise. They also point out where Internet safety issues can be covered within a lesson. Additionally, there are extensive project-based lessons for teachers who already integrate technology and wish to push their skills further.

Hopefully, teachers will find this document a useful addition to their teaching toolkits—sparking their own imaginations and those of their students.

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ENGLISH • *Sixth Grade*

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Oral Language	6.2 b: The student will listen critically and express opinions in oral presentations, and compare and contrast viewpoints.	All students should: recognize that each member brings to the group a viewpoint reflective of his or her background.	The student will plan and deliver an oral presentation, using the following steps—gather information; organize the information with outlines, file cards, or graphic organizers; and create visual aids.

VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate the correct use of fair use and copyright regulations. Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Select and use appropriate tools and technology resources to accomplish a variety of tasks.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Using graphic organizers, groups of students should organize their information for an oral presentation. They then can create a multimedia presentation using clip art or other visuals. If using information from the Internet, students must properly cite their sources.

Internet Safety: If using the Internet as a research tool, remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Reading	6.3: The student will read and learn the meanings of unfamiliar words and phrases.	All students should: recognize that many words have multiple meanings and that both context and dictionaries are supportive in determining which meaning is most appropriate.	The student will use word reference materials, including online sources.

VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate the correct use of fair use and copyright regulations. Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use the Internet and other electronic resources to locate information in real time.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]

Technology Integration Strategies

Students should research word etymologies. They can use the Internet and online card catalog to locate and access print and nonprint resources, including dictionaries and thesauruses.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Reading	6.4 e: The student will read and demonstrate comprehension of a variety of fiction, narrative nonfiction, and poetry by describing cause-effect relationships and their impact on plot.	All students should: identify and define the elements of narrative structure.	The student will use graphic organizers, such as flow charts and story maps, to record plot elements that illustrate cause-and-effect relationships and plot development.

VA SOL for Technology

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development strategies for solving problems. Participate in collaborative problem-solving activities. Select and use appropriate tools and technology resources to accomplish a variety of tasks.]

Technology Integration Strategies

Working in small groups, students should use graphic organizers to develop an understanding of assigned readings (the following is an example of a free cause-and-effect Webbing tool: http://interactives.mped.org/view_interactive.aspx?id=127&title=).

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Reading	6.5 e: The student will read and demonstrate comprehension of a variety of informational selections, organizing the main idea and details to form a summary.	All students should: use graphic organizers to organize and summarize text.	The student will comprehend, record, and remember details and/or facts in order to arrive at a conclusion or generalization.

VA SOL for Technology

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development strategies for solving problems. Participate in collaborative problem-solving activities. Select and use appropriate tools and technology resources to accomplish a variety of tasks.]

Technology Integration Strategies

Working in small groups, students should use graphic organizers to develop an understanding of assigned readings (the following is an example of a free tool for organizing details: http://www.readwritethink.org/student_mat/student_material.asp?id=11).

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Reading	6.5 f: The student will read and demonstrate comprehension of a variety of informational selections by comparing and contrasting information about one topic contained in different selections.	All students should: use graphic organizers to organize and summarize text.	The student will use graphic organizers to show similarities and differences in the information found in several sources about the same topic.

VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development strategies for solving problems. Participate in collaborative problem-solving activities. Select and use appropriate tools and technology resources to accomplish a variety of tasks.]

Technology Integration Strategies

Working in small groups, students should use graphic organizers to develop an understanding of an assigned reading (the following is an example of a free online Venn diagram: http://www.readwritethink.org/student_mat/student_material.asp?id=32).

Internet Safety: If students use the Internet as a resource, remind them they must follow the division's Acceptable Use Policy.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Reading	6.5 g: The student will read and demonstrate comprehension of a variety of informational selections and select informational sources appropriate for a given purpose.	All students should: read in order to gather, organize, and restate information for written and oral presentations.	The student will understand and use the references available in the classroom, school, and public libraries, including general and specialized databases and Internet resources, as appropriate for school use.

VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate the correct use of fair use and copyright regulations. Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Choose the appropriate tool, format, and style to communicate information. Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Students should select appropriate technology for researching information for an intended purpose and audience.

Internet Safety: If students use the Internet as a resource, remind them that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Writing	6.6 a: The student will write narratives, descriptions, and explanations, using a variety of planning strategies to generate and organize ideas.	All students should: use prewriting strategies to select and narrow topics.	The student will use selected prewriting techniques, such as Webbing, mapping, clustering, listing, organizing graphically, questioning, and outlining; and elaborate to give detail, add depth, and continue the flow of an idea.

VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate the correct use of fair use and copyright regulations. Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology.]

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use databases and spreadsheets to evaluate information. Use the Internet and other electronic resources to locate information in real time.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development strategies for solving problems. Participate in collaborative problem-solving activities. Select and use appropriate tools and technology resources to accomplish a variety of tasks.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Choose the appropriate tool, format, and style to communicate information. Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Students should use word-processing and related tools, graphic organizers, databases, and online reference materials effectively to retrieve and present information. Students must properly cite any materials used.

Internet Safety: If students use the Internet as a resource, remind them that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Writing	6.6 e: The student will write narratives, descriptions, and explanations, and revise writing for clarity.	All students should: revise drafts for improvement, using teacher assistance, peer collaboration, and growing independence.	The student will understand that revising to improve a draft includes rereading, reflecting, rethinking, and rewriting.
VA SOL for Technology			
C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]			
Technology Integration Strategies			
Students should use the features in a word processor to revise their drafts of writing pieces.			

This long-term project may assist teachers who are interested in using technology for project-based learning. It incorporates several content and technology SOL.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Reading Writing	<p>6.4 a, d, f, and h: The student will read and demonstrate comprehension of a variety of fiction, narrative nonfiction, and poetry: identify the elements of narrative structure, including setting, character, plot, conflict, and theme; describe how word choice and imagery contribute to the meaning of a text; use information stated explicitly in the text to draw conclusions and make inferences; and paraphrase and summarize the main points in the text.</p> <p>6.5 a, d, e, and f: The student will read and demonstrate comprehension of a variety of informational selections: identify questions to be answered; draw conclusions and make inferences based on explicit and implied information; organize the main idea and details to form a summary; compare and contrast information about one topic contained in different selections; and select informational sources appropriate for a given purpose.</p> <p>6.6 a and e: The student will write narratives, descriptions, and explanations: use a variety of planning strategies to generate and organize ideas and revise writing for clarity.</p> <p>6.7 The student will edit writing for correct grammar, capitalization, punctuation, spelling, and sentence structure.</p>	<p>All students should: understand that fiction includes a variety of genres, including short story, novel, folk literature, and drama; understand that narrative nonfiction includes biography, autobiography, and personal essay; understand that poetry can be rhymed, unrhymed, and/or patterned; differentiate between narrative and poetic forms; understand that imagery and figurative language enrich texts; recognize an author's craft as the purposeful choice of vocabulary, sentence formation, voice, and tone; recognize an author's theme(s); use graphic organizers to organize and summarize text; read beyond the printed text to understand the message stated or implied by an author; select appropriate sources of information based on the purpose for reading; use a variety of strategies, including context, structural analysis, and reference sources, for determining the meaning of unfamiliar and technical vocabulary; read in order to gather, organize, and restate information for written and oral presentations; use prewriting strategies to select and narrow topics; elaborate writing to continue the flow from idea to idea without interruption; select vocabulary and tone with awareness of audience and purpose; proofread and edit drafts for improvement, using teacher assistance, peer collaboration, and growing independence.</p>	<p>The student will notice an author's craft; recognize poetic elements in prose and poetry; use strategies for summarizing; use graphic organizers, such as "It says, I say," to record clues in the text and inferences or conclusions made by the reader as a result of those clues; activate prior knowledge before reading; pose questions prior to and during the reading process; comprehend, record, and remember details and/or facts in order to arrive at a conclusion or generalization; use graphic organizers to show similarities and differences in the information found in several sources about the same topic; use strategies and rules for summarizing; understand and use the references available in the classroom, school, and public libraries; use selected prewriting techniques; elaborate to give detail, add depth, and continue the flow of an idea; understand that revising to improve a draft includes rereading, reflecting, rethinking, and rewriting.</p>

(Chart continued on next page)

VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate the correct use of fair use and copyright regulations.]

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology. Explore the potential of the Internet as a means of personal learning and the respectful exchange of ideas and products.]

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use the Internet and other electronic resources to locate information in real time.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Choose the appropriate tool, format, and style to communicate information. Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Students should choose an issue (such as the balance between freedom and security, global activism, etc.) or a value (compassion, tolerance, heroism, etc.) around which they wish to build several pieces of writing during the year. Using a graphic organizer, the students should brainstorm potential subtopics for research. Through the course of the year, students should weave in readings and writing assignments using the chosen topic. They can create a Web site that collects all their information on this topic, including their own writings, recommended reading list, connections to recommended Web sites, and any other pieces they wish to include. The Web site can be shared with the wider community by advertising it in local media outlets. Students must properly cite any materials used.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information; review potential dangers and pitfalls involved with e-mail communications and Web site creation (such as lack of visual signals, revealing too much personal information, or the permanence of electronic information); and discuss the potential dangers of cyberbullying that can occur when people have strong opinions about topics.



ENGLISH • *Seventh Grade*

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Oral Language	7.2 b: The student will identify the relationship between a speaker's verbal and nonverbal messages by using nonverbal communication skills, such as eye contact, posture, and gestures.	All students should: exhibit confidence when speaking.	The student will use proper posture and stance when speaking; identify whether or not a nonverbal message complements the spoken message; and match vocabulary, tone, and volume to the audience, purpose, and topic of the message.

VA SOL for Technology

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Independently use technology tools to create and communicate for individual and/or collaborative projects.]

Technology Integration Strategies

During oral presentations in the beginning of the year, students should focus on nonverbal communication skills. Using videotapes of their performances, they should conduct self-critiques and retape the presentations based on their observations and conclusions about nonverbal communication techniques.

Internet Safety: Point out that written communications, such as e-mail, do not include nonverbal communication signals and may be easily misinterpreted when the writer is not careful.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Oral Language	7.3 a and b: The student will describe persuasive messages in nonprint media, including television, radio, and video, and identify the persuasive technique used while distinguishing between fact and fiction.	All students should: identify the effect of persuasive messages on the audience and notice use of persuasive language and connotations to convey viewpoint.	The student will describe the effect on the audience of persuasive messages in the media and identify effective word choices in the media.

VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate the correct use of fair use and copyright regulations. Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information.]

Technology Integration Strategies

Students should choose an issue with proponents on at least two sides. They should research television and radio spots (which may also be available on Web sites) and use an evaluation rubric to help distill the persuasive techniques and language used by the authors of these advertisements. Students must properly cite all sources.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information; review the potential dangers of cyberbullying that can occur when people have strong opinions about topics; and point out how these persuasive techniques are used on the Internet.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Reading	7.5 d: The student will read and demonstrate comprehension of a variety of fiction, narrative nonfiction, and poetry by explaining how form, including rhyme, rhythm, repetition, line structure, and punctuation, conveys the mood and meaning of a poem.	All students should: recognize that authors make choices and identify poetic forms (including haiku, limerick, ballad, free verse, couplet, and quatrain).	The student will understand and analyze elements of an author's style, including word choice, sentence structure and language patterns, imagery, and figurative language.

VA SOL for Technology

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Choose the appropriate tool, format, and style to communicate information. Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Working in small groups, students should create electronic presentations using various poems related to a chosen theme, providing commentary on the choices made by the author to convey similar ideas.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Reading	7.6 a: The student will read and demonstrate comprehension of a variety of informational texts by using knowledge of text structures to aid comprehension.	All students should: use the reading process to predict, question, clarify, infer, organize, compare, summarize, and synthesize.	The student will use external textual aids to enhance comprehension.

VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Students should evaluate the structures of various Web pages and how the varying textual formats aid understanding and comprehension. They should then create their own Web pages using the same techniques.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information; review dangers and pitfalls involved with Web site creation (such as revealing too much personal information or the permanence of electronic information); and point out how information potentially can be misused and misunderstood on the Internet.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Reading	7.6 f and g: The student will read and demonstrate comprehension of a variety of informational texts by summarizing what is read and organizing and synthesizing information for use in written and oral presentations.	All students should: use graphic organizers to organize and summarize text.	The student will recognize internal text structures to enhance comprehension and recognize the words and phrases authors use to signal organizational patterns.

VA SOL for Technology

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Select and use appropriate tools and technology resources to accomplish a variety of tasks.]

Technology Integration Strategies

Working in small groups, students should use graphic organizers to develop an understanding of an assigned reading, focusing on text structures and organizational patterns (the following Web site includes free online graphic organizers for such purposes: http://www.readwritethink.org/student_mat/index.asp).

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Reading	7.7 a: The student will apply knowledge of appropriate reference materials by using print and electronic sources to locate information in books and articles.	All students should: use research tools available in school media centers and public libraries.	The student will understand the characteristics of resource tools, including educational online resources and the Internet.

VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate the correct use of fair use and copyright regulations. Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use Internet and other electronic resources to locate information in real time.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]

Technology Integration Strategies

When researching a topic, students should select a variety of resources and include Web pages, online databases, and subscription-based resources. Students must cite all sources properly.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Reading	7.7 c: The student will apply knowledge of appropriate reference materials by synthesizing information from multiple sources.	All students should: choose and use appropriate graphic organizers.	The student will organize and synthesize information with tools, including graphic organizers, spreadsheets, databases, and presentation software.

VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate the correct use of fair use and copyright regulations.]

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Select and use appropriate tools and technology resources to accomplish a variety of tasks.]

Technology Integration Strategies

When conducting research, students should choose appropriate graphic organizers to help organize and synthesize their information. Students must cite all sources properly.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Writing	7.8 e and f: The student will develop narrative, expository, and persuasive writing, revising for clarity and effect, and using a word processor to plan, draft, revise, edit, and publish selected writings.	All students should: use a process for writing, including planning, drafting, revising, proofreading, editing, and publishing, and use peer and individual revising and editing.	The student will apply revising procedures.

VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Students should use a word processor to draft and revise their writings, using feedback from other students—either from their own class or a Web site—which allows them to share their work.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy; review the potential dangers and pitfalls involved with e-mail communications and social networking sites (such as the lack of visual signals, revealing too much personal information, or the permanence of electronic information) and the potential dangers of cyberbullying that occur when people have strong opinions about topics.

This long-term project may assist teachers who are interested in using technology for project-based learning. It incorporates several content and technology SOL.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Reading Writing	<p>7.2 a and b: The student will identify the relationship between a speaker's verbal and nonverbal messages: use verbal communication skills, such as word choice, pitch, feeling, tone, and voice; use nonverbal communication skills, such as eye contact, posture, and gestures.</p> <p>7.5 a, b, e, f, and g: The student will read and demonstrate comprehension of a variety of fiction, narrative nonfiction, and poetry: describe setting, character development, plot structure, theme, and conflict; compare and contrast forms, including short stories, novels, plays, folk literature, poetry, essays, and biographies; draw conclusions based on explicit and implied information; make inferences based on explicit and implied information; and summarize text.</p> <p>7.7 b, c, and d: The student will apply knowledge of appropriate reference materials: use graphic organizers to organize information; synthesize information from multiple sources; and credit primary and secondary sources.</p> <p>7.8 a, b, and c: The student will develop narrative, expository, and persuasive writing: apply knowledge of prewriting strategies, elaborate the central idea in an organized manner; and choose vocabulary and information that will create voice and tone.</p> <p>7.9: The student will edit writing for correct grammar, capitalization, punctuation, spelling, sentence structure, and paragraphing.</p>	All students should: exhibit confidence when speaking; recognize that authors make choices to create stories; make inferences and draw conclusions based on information supplied by an author, combined with the reader's own background knowledge; use strategies and graphic organizers to summarize and analyze text; read, understand, and differentiate the characteristics and narrative structures of short stories, novels, folk literature, plays, personal essays, biographies, and autobiographies; choose and use appropriate graphic organizers; use a process for writing; understand that good writing has been elaborated horizontally and vertically; understand and apply the elements of composing; become independent in checking spelling, using dictionaries and/or electronic tools.	The student will use appropriate facial expressions and gestures or motions to add to what is being said; use proper posture and stance when speaking; match vocabulary, tone, and volume to the audience, purpose, and topic of the message; understand the elements of story, including setting, characters, external conflicts, internal conflicts, plot, and theme; use graphic organizers; understand and analyze elements of an author's style, including word choice, sentence structure, and language patterns, and the use of imagery and figurative language; use strategies for summarizing; use a variety of prewriting strategies; and use written expression to draft and revise compositions, with attention to voice, tone, selection of information, embedded phrases and clauses that clarify meaning, vivid and precise vocabulary, figurative language, and sentence variety.

(Chart continued on next page)

VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate the correct use of fair use and copyright regulations. Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Choose the appropriate tool, format, and style to communicate information. Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Using a broad theme that has applicability for 7th-grade students, such as the meaning of heroism or the conflict between group and personal responsibility, teachers should develop a reading list that provides a wide variety of literary formats. Working in small groups, students should choose particular pieces from the reading list to read and analyze through the unit. The use of various graphic organizers can later be incorporated into a multimedia presentation. This presentation, made orally to their parents during a special event, should use examples from the readings, incorporate literary analysis based on form, and provide an opinion or insight developed by the students on the chosen topic. All sources must be cited properly. Students may use personifications of fictional characters, real people, or authors to illustrate their points.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information; review the potential dangers of cyberbullying that occur when people have strong opinions about topics.



ENGLISH • Eighth Grade

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Oral Language	8.1 d: The student will use interviewing techniques to gain information and evaluate the effectiveness of the interview.	All students should: synthesize information gathered in an interview.	The student will evaluate the effectiveness of his or her own and/or peer interviews using rubrics or checklists.

VA SOL for Technology

C/T 6-8.9: The student will use a variety of media and formats to communicate information ideas effectively to multiple audiences. [Independently use technology tools to create and communicate for individual and/or collaborative projects.]

Technology Integration Strategies

Using an audio or video tape of their interviews, students should review their techniques and questions to identify gaps or misinformation. They should then plan a follow-up interview to address these issues.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Oral Language	8.3 a and c: The student will analyze mass media messages by evaluating the persuasive technique being used and evaluating various sources for the relationships between intent and factual content.	All students should: understand the relationship between causes and effects and identify the effects of persuasive messages on the audience.	The student will identify and analyze persuasive techniques used in the media; describe the effect of persuasive messages in the media on the audience; and identify and evaluate word choice, choice of information, and viewpoint in the media.

VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]

Technology Integration Strategies

Students should access various media examples on the Internet and practice evaluating for viewpoint and persuasive techniques. They should create their own ad or opinion piece based on one of the various persuasion techniques used often by the media. Students can then evaluate the writings of other students (unidentified) and identify various persuasive techniques that have been used.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information; review the potential dangers of cyberbullying that can occur when people have strong opinions about topics; and point out how these persuasive techniques are used on the Internet.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Reading	8.4 b: The student will apply knowledge of word origins, derivations, inflections, analogies, and figurative language to extend vocabulary development by using context, structure, and connotations to determine the meaning of words and phrases.	All students should: use word structure to analyze and relate words; recognize internal and external inflections that change meaning and pronunciation; recognize that words have nuances of meaning and that understanding the connotations may be necessary to determine the appropriate meaning; and recognize that figurative language and analogy enrich text.	The student will recognize the relationships between words related by structure and derivation; use both context and reference skills independently to determine nuances and connotations of words; and understand, evaluate, and use figurative language.

VA SOL for Technology

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development of strategies for solving problems. Use content-specific tools, software, and simulations such as environmental probes, graphic calculators, exploratory environments, and Web tools.]

Technology Integration Strategies

Using graphic organizers, students should analyze various pieces of unfamiliar and above-level writing for relationships among the words. Using the graphic organizers, students can decode the meanings of unfamiliar words (the following Web site includes an example of a printable word journal using a graphic organizer: http://www.readwritethink.org/lesson_images/lesson20/wordjournal.pdf).

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Reading	8.5 c: The student will read and analyze a variety of narrative and poetic forms, describing how authors use characters, conflict, point of view, and tone to create meaning.	All students should: analyze an author's craft and style, make inferences, draw conclusions, and point to an author's implications in the text.	The student will understand the elements of story, understand and analyze elements of an author's style, and understand an author's use of literacy devices.

VA SOL for Technology

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use databases and spreadsheets to evaluate information.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Choose the appropriate tool, format, and style to communicate information. Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Students should create a database to store their analyses of books read throughout the year. The database will include a book review that addresses characters, conflict, point of view, and tone. The students will merge their databases with others at the end of the year to create a resource for others. The students should determine how best to provide that resource.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Writing	8.7 a and e: The student will write in a variety of forms, including narrative, expository, persuasive, and informational, including using prewriting strategies to generate and organize ideas and using available technology.	All students should: use word-processing tools, including spell checkers and grammar checkers, when available.	The student will use a variety of prewriting strategies—including Webbing and using graphic organizers—and apply revising procedures.

VA SOL for Technology

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Students should develop their ideas for writing pieces by using graphic organizers and complete their writing assignments by using word-processing software (the following Web site includes examples of free online graphic organizers: http://www.readwritethink.org/student_mat/index.asp).

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Writing	8.8 a: The student will edit writing for correct grammar, capitalization, punctuation, spelling, sentence structure, and paragraphing, using a variety of graphic organizers, including sentence diagrams, to analyze and improve sentence formation and paragraph structure.	All students should: proofread and edit drafts with teacher assistance, peer collaboration, and growing independence.	The student will diagram complex sentences.

VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development of strategies for solving problems. Use content-specific tools, software, and simulation such as environmental probes, graphic calculators, exploratory environments, and Web tools.]

Technology Integration Strategies

Students should use Web sites or software to learn about and practice diagramming sentences and paragraphs (the following free Web site provides examples of sentence diagramming: <http://grammar.ccc.commnet.edu/grammar/diagrams/diagrams.htm>).

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy.

This long-term project may assist teachers who are interested in using technology for project-based learning. It incorporates several content and technology SOL.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Oral Language Reading Writing	<p>8.1 a, b, and c: The student will use interviewing techniques to gain information, including preparing and asking relevant questions for the interview, making notes of responses, and compiling and reporting responses.</p> <p>8.6 a, b, c, d, and g: The student will read, comprehend, and analyze a variety of informational sources, drawing on background knowledge and knowledge of text structure to understand selections; analyzing the author's credentials, viewpoint, and impact; analyzing the author's use of text structure and word choice; and analyzing details for relevance and accuracy. Students will also evaluate and synthesize information to apply in written and oral presentations.</p> <p>8.7: The student will write in a variety of forms, including narrative, expository, persuasive, and informational.</p> <p>8.8: The student will edit writing for correct grammar, capitalization, punctuation, spelling, sentence structure, and paragraphing.</p>	<p>All students should: synthesize information gathered in an interview; recognize an author's viewpoint and use of persuasive language; read and analyze writing critically; choose graphic organizers based on the internal text structure most prevalent in the text; use graphic organizers and/or rules to analyze and summarize text; read several texts on a similar topic and synthesize what is read in writing to be presented orally; evaluate an author's choice of words and images; recognize an author's use of connotations, persuasive language, and craftsmanship to convey viewpoint; use a process for writing, including planning, drafting, revising, proofreading, editing, and publishing; understand that good writing has been elaborated horizontally and vertically; use peer and individual revising and editing; use word-processing tools, including spell checkers and grammar checkers, when available; understand and apply the elements of composing; and proofread and edit drafts with teacher assistance, peer collaboration, and growing independence.</p>	<p>The student will determine the purpose of the interview; select a subject for the interview; create and record questions that will elicit relevant responses; apply effective note-taking strategies; analyze and record information, using internal text structures, including cause-and-effect, comparison/contrast, enumeration or listing, sequential or chronological, concept/definition, generalization, and process; analyze an author's choice of details by examining accuracy, placement, thoroughness, relevance, and effectiveness; use graphic organizers to record clues in the text and inferences or conclusions made by the reader as a result of those clues; use written expression to draft and revise compositions with attention to voice, tone, selection of information and details, embedded phrases and clauses that clarify meaning and increase variety, vivid and precise vocabulary, figurative language, sentence variety, and transitional words and phrases; apply revising procedures; use complete sentences with appropriate punctuation, including the punctuation of dialogue and the punctuation between dependent and independent clauses; and choose and maintain tense (present, past, future) throughout an entire paragraph or text.</p>

VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate the correct use of fair use and copyright regulations. Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use Internet and other electronic resources to locate information in real time.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Choose the appropriate tool, format, and style to communicate information. Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

As a long-term project, teachers should pair students with an elementary school class (local or distant) to create small books (print or online) relating to topics the younger students are studying. The older students must research the topic, using online sources and books, evaluating them for style and bias (citing all sources properly in the final product). Using good prewriting and writing skills, they should write a book and receive comments from their peers and perhaps children's authors online. The students can publish their stories for the younger students to use.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information; review the potential dangers and pitfalls involved with e-mail communications and social networking sites (such as the lack of visual signals, revealing too much personal information, or the permanence of electronic information); and point out how information on the Internet potentially can be misused or misunderstood.



MATHEMATICS • *Sixth Grade*

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Computation and Estimation	6.7: The student will use estimation strategies to solve multistep practical problems involving whole numbers, decimals, and fractions (rational numbers).	All students should be able to: produce an approximate answer for a given problem and understand that an estimated answer helps validate the reasonableness of a computer answer.	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to solve multistep practical problems involving whole numbers, decimals, and fractions by using estimation strategies and checking for the reasonableness of results.

VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

Technology Integration Strategies

Students should use computer software and/or Web sites to provide simulated situations and practice in estimation (the following free Web sites provide practice exercises: <http://www.aaamath.com/est.html#topic10> and <http://www.shodor.org/interactivate/activities/EstimatorQuiz/>).

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Measurement	6.13 a and b: The student will estimate angle measures, using 45° , 90° , and 180° as referents; use the appropriate tools to measure the given angles; and measure and draw right, acute, and obtuse angles and triangles.	All students should: understand that an angle is two rays diverging from a point and understand names for angles and triangles by defining referents and characteristics.	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to estimate visually the angle measure of a given angle and use appropriate tools to check the reasonableness of the estimate; and draw and measure acute, right, and obtuse angles, using appropriate tools.

VA SOL for Technology

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Participate in collaborative problem-solving activities.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Independently use technology tools to create and communicate for individual and/or collaborative projects.]

Technology Integration Strategies

Students should use drawing software and/or specialized mathematics software or Internet sites to develop a drawing composed only of the angles being studied. They should describe their drawing in writing while another student attempts to replicate the drawings using the same software/Web site.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Geometry	6.17: The student will sketch, construct models of, and classify solid figures (rectangular prism, cone, cylinder, and pyramid).	All students should: understand how to interpret a picture of a solid figure from a two-dimensional diagram and vice versa; and the decomposition of a solid figure into a discrete set of surfaces.	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to construct models for rectangular prisms, cones, cylinders, and pyramids.

VA SOL for Technology

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Select and use appropriate tools and technology resources to accomplish a variety of tasks.]

Technology Integration Strategies

Students should use computer drawing software to construct models of three-dimensional figures (the following Web site provides an example of this: <http://illuminations.nctm.org/ActivityDetail.aspx?ID=70>).

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Probability and Statistics	6.19: The student will describe the mean, median, and mode as measures of central tendency; describe the range; and determine their meaning for a set of data.	All students should: understand that measures of central tendency are types of averages for a data set; that mean, median, and mode are measures of central tendency that are useful for describing data in different situations; and that the range describes the spread of a set of data.	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to find the mean for a set of data; find the median for a set of data; find the mode for a set of data; find the range for a set of data; and describe the three measures of central tendency and a situation in which each would best represent a set of data.

VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate the correct use of fair use and copyright regulations. Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology.]

C/T6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use databases and spreadsheets to evaluate information. Use the Internet and other electronic resources to locate information in real time.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Students should work in collaborative groups to locate and download information from real-time databases relating to a current event in the financial news. They then should use spreadsheet software to evaluate the data, using central tendencies as one guideline. They can present their project to the class using presentation software. All sources must be cited properly.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Patterns, Functions, and Algebra	6.21: The student will investigate, describe, and extend numerical and geometric patterns, including triangular numbers, patterns formed by powers of 10, and arithmetic sequences.	All students should: understand that mathematical patterns can be represented in various forms, geometrically or numerically; that patterns can be recognized, extended, or generalized; that numerical patterns may involve adding or multiplying by the same number; and that geometric patterns may involve shape, size, angles, and transformations of shapes and growth.	The student will use problem solving, mathematical reasoning, connections, and representations to investigate and apply strategies to recognize and describe the change between terms in numerical patterns; investigate and apply strategies to recognize and describe geometric patterns; extend and apply numerical and geometric patterns to similar situations; create numerical and geometric patterns by using a given rule or mathematical relationship; and describe numerical and geometric patterns, including triangular numbers.

VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

Technology Integration Strategies

Students should use computer software and/or Web sites to carry out investigations, explore relationships, and experiment with geometric patterns.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy.

This long-term project may assist teachers who are interested in using technology for project-based learning. It incorporates several content and technology SOL.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Computation and Estimation	<p>6.7: The student will use estimation strategies to solve multistep practical problems involving whole numbers, decimals, and fractions (rational numbers).</p> <p>6.8: The student will solve consumer-application problems involving fractions and decimals and present data and conclusions in paragraphs, tables, or graphs. Planning a budget will be included.</p> <p>6.18: The student, given a problem situation, will collect, analyze, display, and interpret data in a variety of graphical methods, including time, bar, and circle graphs; stem-and-leaf plots; and box-and-whisker plots.</p> <p>Other SOL may be appropriate if a student chooses a product that requires design.</p>	All students should: understand how mathematics relates to problems in daily life, understand how to represent problems within various contexts, understand the importance of planning and maintaining a budget, understand that data can be displayed in a variety of graphical representations, select and use appropriate statistical methods to analyze data, and understand that different types of representations can tell different things about the same data.	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to determine essential information necessary to solve consumer application problems; choose the operation or operations required to solve the problem; solve multistep consumer applications; represent the solution as a data table or graph; present and justify the solution orally or in writing; plan and maintain a budget; collect data sets of no more than 20 items by using tally sheets, surveys, observations, questionnaires, interviews, and polls; organize data by using lists, charts, and tables; and organize and display data in graphs, deciding which type of graph is appropriate for a given situation.

(Chart continued on next page)

VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology. Explore the potential of the Internet as a means of personal learning and the respectful exchange of ideas and products.]

C/T6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use databases and spreadsheets to evaluate information. Use the Internet and other electronic resources to locate information in real time.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]

Technology Integration Strategies

As a major long-term project, students could choose a fund-raising project for charity. The project may involve a product or a service but should not be too elaborate (the focus should be on the process). They should design their project based on Internet research, community research, and polls. They will need to budget for potential funding needs and profit. They can present their plan to school officials and/or the community, conduct their project, and then present the final results to the original group at the conclusion of the year.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information; review the potential dangers and pitfalls involved with Web site creation (such as revealing too much personal information or the permanence of electronic information); review the potential dangers of cyberbullying that can occur when people have strong opinions about topics; and point out that information on the Internet potentially can be misused or misunderstood.



MATHEMATICS • *Seventh Grade*

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Number Sense	7.2: The student will simplify expressions that contain rational numbers and positive exponents, using order of operations, mental mathematics, and appropriate tools.	All students should: select appropriate strategies and tools to simplify expressions.	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to simplify expressions by using the order of operations in a demonstrated step-by-step approach.

VA SOL for Technology

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Students should create hypermedia presentations of strategies to simplify expressions, using the rules for order of operations. These presentations can be made for a specific audience, such as other classes or schools throughout Virginia.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Computation and Estimation	7.4 b: The student will solve consumer-application problems involving tips, discounts, sales tax, and simple interest.	All students should: understand how mathematics relate to problems in everyday life and that tips, discounts, sales tax, and simple interest are computed using the same procedure—i.e., multiplying the base (cost of service, merchandise, or principal) by a rate expressed as a percent.	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to compute the simple interest earned on an investment or a loan for a specified number of years and/or months.

VA SOL for Technology

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use databases and spreadsheets to evaluate information.]

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development of strategies for solving problems. Use a variety of technologies to identify and provide possible solutions to real-world problems.]

Technology Integration Strategies

Students should develop and use a spreadsheet to compare the interest rates of different lending institutions and calculate the most favorable conditions for a loan.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Geometry	7.9: The student will compare and contrast the following quadrilaterals: a parallelogram, rectangle, square, rhombus, and trapezoid. Deductive reasoning and inference will be used to classify quadrilaterals.	All students should: understand that all quadrilaterals can be classified according to the attributes of their sides and/or angles.	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to classify quadrilaterals, using deductive reasoning and inference.

VA SOL for Technology

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development of strategies for solving problems. Use content-specific tools, software, and simulations such as environmental probes, graphic calculators, exploratory environments, and Web tools.]

Technology Integration Strategies

Using mathematics software or Internet sites that allow students to create quadrilaterals, pairs of students should challenge each other, practicing their reasoning skills to identify specific types of quadrilaterals (the following Web site provides a free online geoboard: <http://standards.nctm.org/document/eexamples/chap4/4.2/part2.htm>).

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Geometry	7.12: The student will identify and graph ordered pairs in the four quadrants of a coordinate plane.	All students should: understand that the coordinates of a point define its location in a coordinate plane.	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to graph ordered pairs in the four quadrants of a coordinate plane and identify ordered pairs represented by points in the four quadrants of the coordinate plane.

VA SOL for Technology

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development of strategies for solving problems. Use content-specific tools, software, and simulations such as environmental probes, graphic calculators, exploratory environments, and Web tools.]

Technology Integration Strategies

Students should use graphing software to pursue these exercises.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Probability and Statistics	7.14: The student will investigate and describe the difference between the probability of an event found through simulation versus the theoretical probability of that same event.	All students should: understand the difference between theoretical and experimental probability and that in experimental probability, as the number of trials increases, the experimental probability gets closer to the theoretical probability.	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to investigate and describe the difference between the probability of an event found through simulation versus the theoretical probability of that same event.

VA SOL for Technology

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development of strategies for solving problems. Use content-specific tools, software, and simulations such as environmental probes, graphic calculators, exploratory environments, and Web tools.]

Technology Integration Strategies

Students should use either simulation software or simulations from Internet sites to conduct their own experiments on probability and produce results for an analysis (the following free Web sites provide probability simulators: <http://illuminations.nctm.org/ActivityDetail.aspx?ID=79> and <http://www.subtangent.com/mathsf/flash/probsim.swf>).

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Probability and Statistics	7.15: The student will identify and describe the number of possible arrangements of several objects, using a tree diagram or the Fundamental (Basic) Counting Principle.	All students should: understand that the Fundamental (Basic) Counting Principle is a computational procedure used to determine the number of possible arrangements (combinations or outcomes) of several objects.	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to compute the number of possible arrangements of no more than three types of objects by using the Fundamental (Basic) Counting Principle.

VA SOL for Technology

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Students should partner with younger students to create an e-book or other hypermedia project that demonstrates the various combinations that can be created from several sets of objects (such as pieces of clothing). For their e-book, the students may use photographs from a digital camera or from scanners.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy; review the potential dangers and pitfalls involved with Web site creation (such as revealing too much personal information or the permanence of electronic information); and review issues involved with altering electronic images.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Probability and Statistics	7.17: The student, given a problem situation, will collect, analyze, display, and interpret data, using a variety of graphical methods, including frequency distributions, line plots, histograms, stem-and-leaf plots, box-and-whisker plots, and scattergrams.	All students should: understand that graphs tell a story; understand that data can be displayed in a variety of graphical representations; select and use appropriate statistical methods to analyze data; and understand that different types of graphs can be used to represent the same data in a variety of ways.	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to collect, analyze, display, and interpret a data set of no more than 20 items—using frequency distributions; line plots; histograms; stem-and-leaf plots, where the stem is listed in ascending order and the leaves are in ascending order with or without commas between leaves; box-and-whisker plots that identify the minimum, maximum, median, upper- and lower-extremes, range, and interquartile range; and scattergrams. Interpret data points in scattergrams as having positive, negative, or no relationship.

VA SOL for Technology

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use databases and spreadsheets to evaluate information.]

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development of strategies for solving problems. Use a variety of technologies to identify and provide possible solutions to real-world problems. Participate in collaborative problem-solving activities. Select and use appropriate tools and technology resources to accomplish a variety of tasks.]

Technology Integration Strategies

The teacher may wish to collaborate with another teacher to develop a project that supports interaction between students in two classes. Students should collect and enter data into a spreadsheet they have created for the purpose. They should use various graphs to determine which one suits their purposes best.

This long-term project may assist teachers who are interested in using technology for project-based learning. It incorporates several content and technology SOL.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Computation and Estimation Measurement Probability and Statistics	<p>7.6: The student will use proportions to solve practical problems, which may include scale drawings, which contain rational numbers and percents.</p> <p>7.7 b: The student, given appropriate dimensions, will apply perimeter and area formulas in practical situations.</p> <p>7.8: The student will investigate and solve problems involving the volume and surface area of rectangular prisms and cylinders, using concrete materials and practical situations to develop formulas.</p>	All students should: understand how to set up a proportion, given the relationship between two items; that proportions are useful in solving many types of problems; how to apply area or perimeter in real-life situations; and how to apply volume and surface area in real-life situations.	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to apply proportions to solve practical problems, including scale drawings (scale factors shall have denominators no greater than 12 and/or decimals no less than tenths); apply perimeter and area formulas to solve real-life problems; and solve practical problems that involve finding the surface area and volume of rectangular prisms and cylinders.

VA SOL for Technology

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology. Explore the potential of the Internet as a means of personal learning and the respectful exchange of ideas and products.]

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use databases and spreadsheets to evaluate information. Use Internet and other electronic resources to locate information in real time.]

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development of strategies for solving problems. Use a variety of technologies to identify and provide possible solutions to real-world problems. Use content-specific tools, software, and simulations such as environmental probes, graphic calculators, exploratory environments, and Web tools. Participate in collaborative problem-solving activities. Select and use appropriate tools and technology resources to accomplish a variety of tasks.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Choose the appropriate tool, format, and style to communicate information. Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

As a major long-term project, students should collaborate in small groups to develop plans for a project needed in their community (such as a playground, monument, etc.). To develop the design and find an appropriate and available space, the students should use skills learned on a calculator to figure angles, perimeters, and areas. They will need to use both rectangular prisms and cylinders in their designs. Using software or Web sites, they can design a model and present their plan to the community.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy; review the potential dangers and pitfalls involved with Web site creation (such as revealing too much personal information or the permanence of electronic information); and review the potential dangers of cyberbullying that can occur when people have strong opinions about topics.



MATHEMATICS • Eighth Grade

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Number Sense	8.2: The student will describe orally and in writing the relationship between the subsets of the real number system.	All students should: understand the relationship between subsets of the real number system.	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to describe orally and in writing the relationships among the sets of natural or counting numbers, whole numbers, integers, rational numbers, irrational numbers, and real numbers, and illustrate the relationships among the subsets of the real number system by using graphic organizers.

VA SOL for Technology

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Students should use word-processing software to describe the relationships among numbers and illustrate these relationships using graphic software diagrams.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Computation and Estimation	8.4: The student will apply the order of operations to evaluate algebraic expressions for given replacement values of the variables. Problems will be limited to positive exponents.	All students should: evaluate an algebraic expression by substituting a number for each variable and then simplifying the result; understand how to apply the order of operations after substituting given values for variables in algebraic expressions.	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to substitute numbers for variables in an algebraic expression; simplify the expression by using the order of operations; and apply the order of operations to evaluate formulas.

VA SOL for Technology

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development of strategies for solving problems. Use content-specific tools, software, and simulations such as environmental probes, graphic calculators, exploratory environments, and Web tools.]

Technology Integration Strategies

Students should use computer software or interactive Web sites to explore applications of algebraic expressions (a practice site for simplifying algebraic expressions can be found at the following: <http://www.algebrahelp.com/worksheets/view/simplifying/oops.quiz>).

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Measurement	8.7: The student will investigate and solve practical problems involving volume and surface area of rectangular solids, cylinders, cones, and pyramids.	All students should: understand the derivation of formulas for volume and surface area and the differences between volume and surface area.	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to compute the surface area of a pyramid by finding the sum of the areas of the triangular faces and the base; compute the volume and surface area of rectangular solids, cylinders, cones, and square pyramids, using formulas; and investigate and solve problems involving volume and surface area of rectangular solids, cylinders, cones, and pyramids.

VA SOL for Technology

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use databases and spreadsheets to evaluate information. Use Internet and other electronic resources to locate information in real time.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development of strategies for solving problems. Use a variety of technologies to identify and provide possible solutions to real-world problems. Participate in collaborative problem-solving activities. Select and use appropriate tools and technology resources to accomplish a variety of tasks.]

Technology Integration Strategies

Students should use the Internet to investigate the outside dimensions of various ancient pyramids built by different cultures; since different sites likely provide different dimensions, students will need to understand how to evaluate the accuracy of various information providers. They should also use various technology tools to calculate the volume of each pyramid and compare the findings to a completely triangular pyramid (all four sides are triangles). The students can speculate about the similarity of dimensions of the ancient pyramids.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Geometry	8.8: The student will apply transformations to geometric figures represented on graph paper. The student will identify applications of transformations, such as tiling, fabric design, art, and scaling.	All students should: understand the relationship between transformations in a coordinate plan and their application in real life.	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to identify the geometric transformations by using a variety of real-life examples and demonstrate the reflection, various rotations, translation, and dilations of figures on a coordinate grid.

VA SOL for Technology

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Working in small groups, students should use digital cameras to identify examples of transformation in real-world situations and create community slide shows or digital stories. The end product can be published on a local Web site.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Probability and Statistics	8.11: The student will analyze problem situations, including games of chance, board games, or grading scales, and make predictions, using knowledge of probability.	All students should: understand how to make predictions based on knowledge of probability; that choices that involve chance are based on an understanding of the reasonableness of obtaining a specific outcome; and that knowledge of probability can be used to determine the likelihood of winning such events as contests.	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to analyze a problem situation and determine the likelihood of an event occurring, using knowledge of probability; predict the outcome of an event by analyzing its probability; explain the consequences of making different choices, using the knowledge of probability; and make predictions about the outcomes of games of chance, board games, and grading scales by using knowledge of probability.

VA SOL for Technology

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development of strategies for solving problems. Use content-specific tools, software, and simulations such as environmental probes, graphic calculators, exploratory environments, and Web tools.]

Technology Integration Strategies

Students should use simulation software or simulations from the Internet as supplements to hands-on activities in exploring probability; simulations are excellent ways to extend the amount of trials that individuals can conduct (the following Web sites offer probability simulators: <http://illuminations.nctm.org/ActivityDetail.aspx?ID=79> and <http://www.subtangment.com/mathsf/flash/probsim.swf>).

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Patterns, Functions, and Algebra	8.16: The student will graph a linear equation in two variables, in the coordinate plane, using a table of ordered pairs.	All students should: understand that the graph of a linear equation in two variables is the set of all ordered pairs that satisfy the equation.	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to construct a table of ordered pairs by substituting values for x in a linear equation to find values for y ; plot in the coordinate plane ordered pairs (x,y) from a table; and connect the ordered pairs to form a straight line.

VA SOL for Technology

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development of strategies for solving problems. Use content-specific tools, software, and simulations such as environmental probes, graphic calculators, exploratory environments, and Web tools.]

Technology Integration Strategies

Students should use graphing software to create graphs and investigate different ordered pairs (the following Web site includes an example of a free graphing software tool: <http://illuminations.nctm.org/ActivityDetail.aspx?ID=38>).

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy.

This long-term project may assist teachers who are interested in using technology for project-based learning. It incorporates several content and technology SOL.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Computation and Estimation Measurement Geometry Patterns, Functions, and Algebra	<p>8.3: The student will solve practical problems involving rational numbers, percents, ratios, and proportions. Problems will be of varying complexities and will involve real-life data, such as finding a discount and discount prices and balancing a checkbook.</p> <p>8.6: The student will verify by measuring and describe the relationships among vertical angles, supplementary angles, and complementary angles and will measure and draw angles of less than 360 degrees.</p> <p>8.7: The student will investigate and solve practical problems involving the volume and surface area of rectangular solids, cylinders, cones, and pyramids.</p> <p>8.8: The student will apply transformations to geometric figures represented on graph paper. The student will identify applications of transformations, such as tiling, fabric design, art, and scaling.</p> <p>8.17: The student will create and solve problems, using proportions, formulas, and functions.</p>	All students should: understand how mathematics relates to problems in daily life; how to set up a proportion given the relationship between two items; how to use angle-measuring tools; the differences between volume and surface area; the relationship between transformations in a coordinate plan and their application in real life; that proportions, formulas, and functions are ways to express relationships mathematically and are tools for solving problems.	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to solve practical problems by using computation procedures; measure angles of less than 360 degrees to the nearest degree, using appropriate tools; investigate and solve problems involving volume and surface area of rectangular solids, cylinders, cones, and pyramids; identify the geometric transformations by using a variety of real-life examples; write problems that require establishing a relationship between ratios; and solve problems by using proportions.

VA SOL for Technology

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology. Explore the potential of the Internet as a means of personal learning and the respectful exchange of ideas and products.]

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use databases and spreadsheets to evaluate information. Use Internet and other electronic resources to locate information in real time.]

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development of strategies for solving problems. Use a variety of technologies to identify and provide possible solutions to real-world problems. Use content-specific tools, software, and simulations such as environmental probes, graphic calculators, exploratory environments, and Web tools. Participate in collaborative problem-solving activities. Select and use appropriate tools and technology resources to accomplish a variety of tasks.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Choose the appropriate tool, format, and style to communicate information. Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Mathematics students should work with an art class to develop a tiled mural for their school or community. The mathematics class should determine the best way to translate the art students' design into a grid pattern. They must enlarge the pattern proportionally to fit the selected site. The mathematics class should calculate the approximate number of tiles needed in each color, the types of shapes needed to make smooth transitions within the mural, the amount of clay needed, and the estimated project cost. The art students should build the mural based on these calculations. At the mural dedication, the mathematics class should provide a multimedia presentation that shows their calculations and diagrams of the planning process.

Internet Safety: Review the potential dangers of cyberbullying that can occur when people have strong opinions about topics.



SCIENCE • *Sixth Grade*

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Force, Motion, and Energy	<p>6.2 c and d: The student will investigate and understand basic sources of energy, their origins, transformations, and uses. Key concepts include nonrenewable energy sources and renewable energy sources.</p> <p>6.1 b: The student will plan and conduct investigations in which a classification system is developed based on multiple attributes.</p>	Heat and light can be converted into energy; solar energy is stored in fossil fuels, which are nonrenewable; perpetually available energy comes from solar, wind, water, and geothermal energy; wood and biomass sources are renewable.	The student will compare and contrast energy sources in terms of their origins, how they are utilized, and their availability.

VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate the correct use of fair use and copyright regulations. Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology.]

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use databases and spreadsheets to evaluate information. Use Internet and other electronic resources to locate information in real time.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development of strategies for solving problems. Use a variety of technologies to identify and provide possible solutions to real-world problems. Participate in collaborative problem-solving activities.]

Technology Integration Strategies

Students should research information on the Internet about different energy sources. They can set up databases to compare and contrast different sources and identify the best type for a particular need.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information; review the potential dangers of cyberbullying that can occur when people have strong opinions about topics.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Force, Motion, and Energy	<p>6.2 d: The student will investigate and understand basic sources of energy, their origins, transformations, and uses. Key concepts include renewable energy sources.</p> <p>6.1 d and k: The student will plan and conduct investigations in which scale models are used to estimate distance, volume, and quantity and an understanding of the nature of science is developed and reinforced.</p>	Heat and light can be converted into energy; modern industrial society is dependent upon energy.	The student will design an application of the use of solar and wind energy.

VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate the correct use of fair use and copyright regulations. Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology.]

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use Internet and other electronic resources to locate information in real time.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development of strategies for solving problems. Use a variety of technologies to identify and provide possible solutions to real-world problems. Participate in collaborative problem-solving activities.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Working in collaborative groups, students should use the Internet to communicate with experts while developing a practical use for wind or solar energy. The students should build models of their inventions and present them to a community audience using technology-communication tools.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy; review the potential dangers and pitfalls involved with both e-mail communications and social networking sites (such as the lack of visual signals, revealing too much personal information, or permanence of electronic information); and the potential dangers of cyberbullying that can occur when people have strong opinions about topics.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Matter	<p>6.4 f: The student will investigate and understand that all matter is made up of atoms. Key concepts include chemical equations, which can be used to model chemical changes.</p> <p>6.1 j: The student will plan and conduct investigations in which models are used to explain a sequence.</p>	Chemical equations can be used to model chemical changes, illustrating how elements become rearranged in a chemical reaction.	The student will model a simple chemical change with an equation and account for all atoms.

VA SOL for Technology

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Students should create a simple diagram of a chemical change using graphic-based software.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Matter	<p>6.5 d: The student will investigate and understand the unique properties and characteristics of water and its roles in the natural and human-made environment. Key concepts include the ability of large bodies of water to store heat and moderate climate.</p> <p>6.1 i: The student will plan and conduct investigations in which data are organized and communicated through graphical representation (graphs, charts, and diagrams).</p>	Water is able to absorb heat energy without showing relatively large changes in temperature. Large bodies of water act to moderate the climate of surrounding areas by absorbing heat in summer and slowly releasing that heat in the winter. For this reason, the climate near large bodies of water is slightly milder than areas without large bodies of water.	The student will analyze and explain the difference in average winter temperatures among areas in central and western Virginia and cities and counties along the Chesapeake Bay and Atlantic Coast.

VA SOL for Technology

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology.]

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use databases and spreadsheets to evaluate information. Use Internet and other electronic resources to locate information in real time.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development of strategies for solving problems. Use a variety of technologies to identify and provide possible solutions to real-world problems. Participate in collaborative problem-solving activities. Select and use appropriate tools and technology resources to accomplish a variety of tasks.]

Technology Integration Strategies

Students should research temperatures in various areas of Virginia and analyze their findings. They must determine the appropriate technology for completing this task and present their findings to fellow students.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Interrelationships in Earth/Space Systems	6.8 a and b: The student will investigate and understand the organization of the solar system and the relationships among the various bodies that comprise it. Key concepts include (1) the sun, moon, Earth, other planets and their moons, meteors, asteroids, and comets and (2) the relative size of and distance between planets.	The solar system consists of the sun, moon, Earth, other planets and their moons, meteors, asteroids, and comets. Each body has its own characteristics and features. The distances between planets and sizes of the planets vary greatly.	The student will describe the nine planets and their relative positions from the sun.
VA SOL for Technology			
C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate the correct use of fair use and copyright regulations. Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]			
C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology.]			
C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]			
C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Choose the appropriate tool, format, and style to communicate information. Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]			
Technology Integration Strategies			
Students should create an elementary-level e-book (using word-processing, desktop-publishing, or hypermedia software) that includes information about all the planets and their positions in the solar system. Students must cite their sources properly. The e-book can be provided to a local science museum, daycare center, etc.			

This long-term project may assist teachers who are interested in using technology for project-based learning. It incorporates several content and technology SOL.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Living Systems	<p>6.7: The student will investigate and understand the natural processes and human interactions that affect watershed systems. Key concepts include the health of ecosystems and the abiotic factors of a watershed; the location and structure of Virginia's regional watershed systems; divides, tributaries, river systems, and river and stream processes; wetlands and estuaries; major conservation, health, and safety issues associated with watersheds; and water monitoring and analysis using field equipment, including hand-held technology.</p> <p>6.1 c, e, f, h, i, j, and k: The student will plan and conduct investigations in which precise and approximate measurements are recorded; hypotheses are stated in ways that identify the independent and dependent variables; a method is devised to test the validity of predictions and inferences; data are collected, recorded, analyzed, and reported using appropriate metric measurements; data are organized and communicated through graphical representation; models are designed to explain a sequence; and an understanding of the nature of science is developed and reinforced.</p>	<p>Abiotic factors determine ecosystem type and its distribution of plants and animals as well as the usage of land by people. Human activities can alter abiotic components and thus accelerate or decelerate natural processes. The three major regional watershed systems in Virginia lead to the Chesapeake Bay, the North Carolina sounds, or the Gulf of Mexico. Wetlands form the transition zone between dry land and bodies of water such as rivers, lakes, or bays. Both tidal and non-tidal wetlands perform important water quality functions. Estuaries perform important functions; the Chesapeake Bay is an estuary where fresh and salt water meet and are mixed by tides. Water quality monitoring is the collection of water samples to analyze chemical and/or biological parameters.</p>	<p>The student will analyze and explain the functioning of wetlands and appraise the value of wetlands to humans; propose ways to maintain water quality within a watershed; explain the factors that affect water quality in a watershed and how those factors can affect an ecosystem; locate and critique a media article or editorial (print or electronic) concerning water use or water quality; analyze and evaluate the science concepts involved; argue for and against commercially developing a parcel of land containing a large wetland area; and design and defend a land-use model that minimizes negative impact.</p>

VA SOL for Technology

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology. Explore the potential of the Internet as a means of personal learning and the respectful exchange of ideas and products.]

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use technology resources such as calculators and data collection probes for gathering information. Use the Internet and other electronic resources to locate information in real time.]

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development of strategies for solving problems. Use a variety of technologies to identify and provide possible solutions to real-world problems. Use content-specific tools, software, and simulations, such as environmental probes, graphic calculators, exploratory environments, and Web tools. Participate in collaborative problem-solving activities. Select and use appropriate tools and technology resources to accomplish a variety of tasks.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Choose the appropriate tool, format, and style to communicate information. Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Students should choose a local issue related to water quality and/or wetlands. They should research, consult experts, take measurements using hand-held technology, develop and test hypotheses, create solutions to problems, develop presentations to local community groups, and publish final reports.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy; review the potential dangers and pitfalls involved with e-mail communications and social networking sites (such as the lack of visual signals, revealing too much personal information, or permanence of electronic information); and the potential dangers of cyberbullying that occur when people have strong opinions about topics.



SCIENCE • *Life Science*

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Life Science: Cells	<p>LS.2 b: The student will investigate and understand that all living things are composed of cells. Key concepts include similarities and differences between plant and animal cells.</p> <p>LS.1 d: The student will plan and conduct investigations in which models are constructed to illustrate and explain phenomena.</p>	Similarities and differences in plants and animals are evident at the cellular level. Plant and animal cells contain some of the same organelles and some that differ.	The student will compare and contrast examples of plant and animal cells, using the light microscope and images obtained from microscopes.

VA SOL for Technology

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Students should research information on the Internet about different energy sources. They can set up databases to compare and contrast different sources and identify the best type for a particular need.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information; review the potential dangers of cyberbullying that can occur when people have strong opinions about topics.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Life Science: Basic Needs	<p>LS.4 c: The student will investigate and understand that the basic needs of organisms must be met in order to carry out life processes. Key concepts include factors that influence life processes.</p> <p>LS.1 j: The student will plan and conduct investigations in which an understanding of the nature of science is developed and reinforced.</p>	Numerous factors can strongly influence the life processes of organisms.	The student will create plausible hypotheses about the effects that changes in available materials might have on particular life processes in plants and animals.

VA SOL for Technology

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology.]

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development of strategies for solving problems. Use a variety of technologies to identify and provide possible solutions to real-world problems. Participate in collaborative problem-solving activities.]

Technology Integration Strategies

Groups of students should pose questions to one another regarding the basic needs of organisms. Each group should use concept-mapping software to help organize its thinking.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Life Science: Classification	<p>LS.5: The student will investigate and understand how organisms can be classified.</p> <p>LS.1 i: The student will plan and conduct investigations in which interpretations from a set of data are evaluated and defended.</p>	Information about physical features and activities is arranged in a hierarchy of increasing specificity. Any grouping of organisms into kingdoms is based on several factors.	The student will classify organisms based on physical features and arrange organisms in a hierarchy according to similarities and differences in features.

VA SOL for Technology

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use databases and spreadsheets to evaluate information.]

Technology Integration Strategies

Students should brainstorm and then create databases that categorize classifications of organisms. They can compare their schemes with those created by scientists.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Life Science: Photosynthesis	<p>LS.6: The student will investigate and understand the basic physical and chemical processes of photosynthesis and its importance to plant and animal life. Key concepts include energy transfer between sunlight and chlorophyll, the transformation of water and carbon dioxide into sugar and oxygen, and photosynthesis as the foundation for virtually all food webs.</p> <p>LS.1 f and g: The student will plan and conduct investigations in which dependent variables, independent variables, and constants are identified; variables are controlled to test hypotheses, and trials are repeated.</p>	Photosynthesis is the necessary life process that transforms light energy into chemical energy.	The student will design an investigation from a testable question related to photosynthesis. The investigation may be a complete experimental design or may focus on systematic observation, description, measurement, and/or data collection and analysis.

VA SOL for Technology

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology.]

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use the Internet and other electronic resources to locate information in real time.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information.]

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development of strategies for solving problems. Use a variety of technologies to identify and provide possible solutions to real-world problems. Participate in collaborative problem-solving activities.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Independently use technology tools to create and communicate for individual and/or collaborative projects.]

Technology Integration Strategies

Students should collaborate with students from other parts of the world and/or scientists to create a testable question related to photosynthesis. They should develop an experimental design and follow through on the experiment (this Web site can help identify other classes for online projects: <http://www.globalschoolhouse.com/GSH/pr/index.cfm>).

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy; review the potential dangers and pitfalls involved with e-mail communications and social networking sites (such as the lack of visual signals, revealing too much personal information, or permanence of electronic information).

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Life Science: Genetics	LS.13 f and g: The student will investigate and understand that organisms reproduce and transmit genetic information to new generations. Key concepts include genetic engineering and its applications and historical contributions and significance of discoveries related to genetics.	In genetic engineering, the genetic code is manipulated to obtain a desired product. Genetic engineering has numerous practical applications in medicine, agriculture, and biology.	The student will identify aspects of genetic engineering, supply examples of applications, and evaluate the examples for possible controversial aspects.

VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate the correct use of fair use and copyright regulations. Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use Internet and other electronic resources to locate information in real time.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Students should research current issues related to genetic engineering and review various Web sites devoted to controversies surrounding the issue. They should evaluate sites for accuracy and bias to discern the facts of the issue. Students can then develop an essay supporting a position on the subject.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information; review the potential dangers of cyberbullying that can occur when people have strong opinions about topics; and point out that information on the Internet potentially can be misused or misunderstood.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Life Science: Genetics	LS.14 a: The student will investigate and understand that organisms change over time. Key concepts include the relationships of mutation, adaptation, natural selection, and extinction.	The mechanisms through which evolution takes place are a related set of processes that include mutation, adaptation, natural selection, and extinction. Natural selection is the survival and reproduction of the individuals in a population that exhibit the traits that best enable them to survive in their environment. If a species does not include traits that enable it to survive in its environment or to survive changes in the environment, then the species may become extinct.	The student will describe how changes in the environment can bring about changes in species through natural selection, adaptation, and extinction and will explain the evidence for evolution from a variety of sources of scientific data.

VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate the correct use of fair use and copyright regulations. Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use the Internet and other electronic resources to locate information in real time.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

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Technology Integration Strategies

Students should use Internet resources to collect current data on species close to extinction. They also should research the evolution of a particular species over time. They can use presentation software to create a wordless, pictorial essay about the evolution and current status of the species.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information; review issues involved with altering electronic images.

This long-term project may assist teachers who are interested in using technology for project-based learning. It incorporates several content and technology SOL.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Life Science: Ecosystems	<p>LS.7: The student will investigate and understand that organisms within an ecosystem are dependent on one another and on nonliving components of the environment.</p> <p>LS.8: The student will investigate and understand that interactions exist among members of a population.</p> <p>LS.9: The student will investigate and understand interactions among populations in a biological community.</p> <p>LS.10: The student will investigate and understand how organisms adapt to biologic and abiotic factors in an ecosystem.</p> <p>LS.11: The student will investigate and understand that ecosystems, communities, populations, and organisms are dynamic and change over time (daily, seasonal, and long term).</p> <p>LS.12: The student will investigate and understand the relationships between ecosystem dynamics and human activity.</p> <p>LS.1: The student will plan and conduct investigations.</p>	In order to understand how an ecosystem functions, one must understand the concept of a system and be able to envision models of systems. Individual members of a population interact with each other. Energy resources of a community are shared through the interactions of producers, consumers, and decomposers. Each organism fills a specific role or niche in its community. Organisms have specific structures, functions, and behaviors that enable them to survive the conditions of the particular ecosystem in which they live. A variety of environmental factors may cause the size of a population to increase or decrease. Large-scale changes may affect entire communities and ecosystems. Human interaction can directly alter habitat size, the quality of available resources in a habitat, and the structure of habitat components. Such interactions can be positive and/or negative. The interaction of humans with the dynamic ecosystem may lead to issues of concern for continued ecosystem health in areas such as water supply, air quality, energy production, and waste management.	The student will observe local ecosystems and identify, measure, and classify the living and nonliving components; design an investigation from a testable question related to food webs; observe and identify populations in ecosystems and collect, record, chart, and interpret data concerning the interactions of these organisms (from observations and print and electronic resources); design an investigation from a testable question related to interactions among populations; design an investigation from a testable question related to how organisms adapt to biotic and abiotic factors in ecosystems; predict the effect of large scale changes on ecosystems, communities, populations, and organisms; design an investigation from a testable question related to change over time in ecosystems, communities, populations, or organisms; describe ways that human interaction has altered habitats positively and negatively; observe the effect of human interaction in local ecosystems and collect, record, chart, and interpret data concerning the effect of interaction (from observations and print and electronic resources); and design an investigation from a testable question related to the relationships between ecosystem dynamics and human activity.
VA SOL for Technology			
C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology. Explore the potential of the Internet as a means of personal learning and the respectful exchange of ideas and products.]			
C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use technology resources such as calculators and data collection probes for gathering information. Use Internet and other electronic resources to locate information in real time.]			
C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development of strategies for solving problems. Use a variety of technologies to identify and provide possible solutions to real-world problems. Use content-specific tools, software, and simulations such as environmental probes, graphic calculators, exploratory environments, and Web tools. Participate in collaborative problem-solving activities. Select and use appropriate tools and technology resources to accomplish a variety of tasks.]			
C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Choose the appropriate tool, format, and style to communicate information. Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]			

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Technology Integration Strategies

Students should conduct a long-term investigation into the potential impact of a local development project on the ecosystem. They should gather information using observations, hand-held technology, and contact with experts via the Internet. They should interpret their data and develop a plan of action to help offset potential ecosystem disruption. This plan can be presented to the local community.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy; review the potential dangers and pitfalls involved with e-mail communications and social networking sites (such as the lack of visual signals, revealing too much personal information, or permanence of electronic information); and review the potential dangers of cyberbullying that can occur when people have strong opinions about topics.



SCIENCE • *Physical Science*

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Physical Science: Matter	<p>PS.2 d: The student will investigate and understand the basic nature of matter. Key concepts include characteristics of types of matter based on physical and chemical properties.</p> <p>PS.1 a, k, l, and n: The student will plan and conduct investigations in which chemicals and equipment are used safely; valid conclusions are made after analyzing data; research methods are used to investigate practical problems and questions; and an understanding of the nature of science is developed and reinforced.</p>	Matter can be described by its physical properties. Characteristic properties can be used to identify unknown substances. Matter can also be described by its chemical properties. A chemical property indicates whether a substance can undergo a chemical change.	The student will distinguish between physical properties and chemical properties; determine the identity of an unknown substance by comparing its properties to those of known substances; and design an investigation from a testable question related to physical and chemical properties of matter.

VA SOL for Technology

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology.]

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use databases and spreadsheets to evaluate information.]

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development of strategies for solving problems. Use a variety of technologies to identify and provide possible solutions to real-world problems. Participate in collaborative problem-solving activities.]

Technology Integration Strategies

Students should work in small groups to create a database tool (using any database software) that can identify matter quickly and accurately based on physical and chemical properties. They then should develop investigations to identify unknown substances (provided by the groups to one another), using the database as their reference tool.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Physical Science: Atomic Structure	PS.3 a: The student will investigate and understand the modern and historical models of atomic structure, including the contributions of Dalton, Thomson, Rutherford, and Bohr in understanding the atom.	Scientists use models to help explain the structure of the atom. Their understanding of the structure of the atom continues to evolve.	The student will describe the historical development of the concept of the atom and the contributions of Dalton, Thomson, Rutherford, and Bohr.

VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate the correct use of fair use and copyright regulations. Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

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Technology Integration Strategies

Using multimedia software, students should create a timeline that documents the development of the concept of the atom. Students can use rubrics to evaluate one another's products.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Physical Science: Periodic Table	<p>PS.4: The student will investigate and understand the organization and use of the periodic table of elements to obtain information.</p> <p>PS.1 a, b, f, l, and n: The student will plan and conduct investigations in which chemicals and equipment are used safely; the length, mass, volume, density, temperature, weight, and force are accurately measured and reported using metric units; research skills are utilized using a variety of resources; research methods are used to investigate practical problems and questions; and an understanding of the nature of science is developed and reinforced.</p>	The periodic table of elements is a tool used to organize information about the elements. The periodic table of elements is an arrangement of elements according to atomic number and properties. The information can be used to predict chemical reactivity.	The student will use the periodic table to gain information and describe the organization of the periodic table.

VA SOL for Technology

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Choose the appropriate tool, format, and style to communicate information. Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Students should work in small groups to create an interactive multimedia tool based on the periodic table, using Web-authoring or multimedia software. The multimedia tools should largely comprise short video clips of student experiments relating to the combinations of various elements.

Internet Safety: Review the potential dangers and pitfalls involved with Web site creation (such as revealing too much personal information or permanence of electronic information).

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Physical Science: Energy	<p>PS.5 b: The student will investigate and understand changes in matter and the relationship of these changes to the Law of Conservation of Matter and Energy. Key concepts include nuclear reactions (products of fusion and fission) and the effect of these products on human beings and the environment.</p> <p>PS.1 a, f, and n: The student will plan and conduct investigations in which chemicals and equipment are used safely; research skills are utilized using a variety of resources; and an understanding of the nature of science is developed and reinforced.</p>	Nuclear energy is the energy stored in the nucleus of an atom. In nuclear reactions, a small amount of matter produces a large amount of energy. However, there are potential negative effects of using nuclear energy, including radioactive nuclear waste storage and disposal.	The student will evaluate the positive and negative effects of using nuclear energy.

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VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate the correct use of fair use and copyright regulations. Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Choose the appropriate tool, format, and style to communicate information. Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Students should research various Web sites to develop a working list of positives and negatives about nuclear energy. They must evaluate their sources based on the scientific principles stated or implied by the authors. They should develop a short oral or multimedia presentation to describe their own conclusions about the positives and negatives of and recommendations for the use of nuclear energy.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information; review the potential dangers of cyberbullying that can occur when people have strong opinions about topics; and point out how these persuasive techniques are used on the Internet.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Physical Science: Temperature	<p>PS.7 b: The student will investigate and understand temperature scales, heat, and heat transfer. Key concepts include phase change, freezing point, melting point, boiling point, vaporization, and condensation.</p> <p>PS.1 b, d, g, h, and i: The student will plan and conduct investigations in which volume, density, and temperature are accurately measured and reported using metric units; thermometers are used to gather data; independent and dependent variables, constants, controls, and repeated trials are identified; data tables are constructed and interpreted; and data tables for descriptive statistics showing specific measures of central tendency, the range of the data set, and the number of repeated trials are constructed and interpreted.</p>	Heat and temperature are not the same thing. As heat energy is added to or taken away from a system, the temperature does not always change. There is no change in temperature during a phase change as this energy is being used to make or break bonds between molecules.	The student will analyze a time/temperature graph of a phase change experiment to determine the temperature at which the phase change occurs.

VA SOL for Technology

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use databases and spreadsheets to evaluate information. Use technology resources such as calculators and data collection probes for gathering information. Use the Internet and other electronic resources to locate information in real time.]

Technology Integration Strategies

Students should develop experiments using electronic probes to explore phase changes. They can use tables and graphs to report their findings.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Physical Science: Work, Force, Motion	<p>PS.10 d: The student will investigate and understand scientific principles and technological applications for work, force, and motion. A key concept includes applications (simple machines, compound machines, powered vehicles, rockets, and restraining devices).</p> <p>PS.1 f: The student will plan and conduct investigations in which research skills are utilized using a variety of resources.</p>	A simple machine is a device that makes work easier. Simple machines have different purposes: to change the effort needed (mechanical advantage), to change the direction or distance through which the force is applied, to change the speed at which the resistance moves, or a combination of these. Due to friction, the work put into a machine is always greater than the work output. The ratio of work output to work input is called efficiency.	The student will apply the concept of mechanical advantage to test and explain how a machine makes work easier and how the concepts of work, force, and motion apply to car safety technology, machines, and rockets.
VA SOL for Technology			
<p>C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information.]</p> <p>C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Use content-specific tools, software, and simulations such as environmental probes, graphic calculators, exploratory environments, and Web tools.]</p>			
Technology Integration Strategies			
<p>Using the Internet, students should research applications of simple and compound machines. They also can use various Web sites or software simulations to explore the concepts of mechanical advantage and efficiency.</p> <p>Internet Safety: Remind students that they must follow the division's Acceptable Use Policy.</p>			

This long-term project may assist teachers who are interested in using technology for project-based learning. It incorporates several content and technology SOL.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Physical Science: Energy	<p>PS. 5: The student will investigate and understand changes in matter and the relationship of these changes to the Law of Conservation of Matter and Energy.</p> <p>PS.6: The student will investigate and understand states and forms of energy and how energy is transferred and transformed.</p> <p>PS.7 d: The student will investigate and understand temperature scales, heat, and heat transfer. Key concepts include applications of heat transfer (heat engines, thermostats, refrigeration, and heat pumps).</p> <p>PS.1 b, f, g, h, i, j, k, and l: The student will plan and conduct investigations in which length, mass, volume, density, temperature, weight, and force are accurately measured and reported using metric units; research skills are utilized using a variety of resources; independent and dependent variables, constants, controls, and repeated trials are identified; data tables showing the independent and dependent variables, derived quantities, and the number of trials are constructed and interpreted; data tables for descriptive statistics showing specific measures of central tendency, the range of the data set, and the number of repeated trials are constructed and interpreted; frequency distributions, scattergrams, line plots, and histograms are constructed and interpreted; validated conclusions are made after analyzing data; and research methods are used to investigate practical problems and questions.</p>	<p>Energy exists in two states. Potential energy is stored energy based on position or chemical composition. Kinetic energy is energy of motion. Students should know that the amount of potential energy associated with an object depends on its position. The amount of kinetic energy depends on the mass and velocity of the moving object. Important forms of energy include light, heat, chemical, electrical, mechanical, and nuclear energy. Energy can be transformed from one type to another.</p> <p>Nuclear energy is the energy stored in the nucleus of an atom.</p> <p>Increased temperature means greater average kinetic energy of the substance being measured.</p>	<p>The student will differentiate between potential and kinetic energy; use diagrams or concrete examples to compare relative amounts of potential and kinetic energy; identify and give examples of common forms of energy; design an investigation or create a diagram to illustrate energy transformations; describe in simple terms the process that releases nuclear energy; and explain in simple terms how the principle of heat transfer applies to heat engines, thermostats, and refrigerators and heat pumps.</p>

VA SOL for Technology

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Choose the appropriate tool, format, and style to communicate information. Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Working in small groups, students should choose from a variety of technologies to develop presentations for sixth-grade students studying energy. They may opt to use digital cameras, graphing calculators, video, or any other technology that will convey their topic effectively. The presentations should cover basic energy concepts and demonstrations of energy transformations.

Internet Safety: Review issues involved with altering electronic images.



HISTORY & SOCIAL SCIENCE

US History to 1877

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
US Geography Expansion and Reform: 1801-1861	<p>USI.2 b and c: The student will use maps, globes, photographs, pictures, and tables to locate and describe the location of the geographic regions of North America and to locate and identify the water features important to the early history of the United States.</p> <p>USI.8 a and b: The student will demonstrate knowledge of westward expansion and reform in America from 1801-1861 by describing territorial expansion and how it affected the political map of the United States, with emphasis on the Louisiana Purchase; the Lewis and Clark expedition; and the acquisitions of Florida, Texas, Oregon, and California; and by identifying the geographic and economic factors that influenced the westward movement of the settlers.</p> <p>USI.1 f: The student will develop skills for historical and geographical analysis, including the ability to analyze and interpret maps to explain relationships among landforms, water features, climate characteristics, and historical events.</p>	<p>Geographic regions have distinctive characteristics.</p> <p>The United States has access to numerous and varied bodies of water.</p> <p>Bodies of water support interaction among regions, form borders, and create links to other areas.</p> <p>Between 1801 and 1861, exploration was encouraged as America underwent vast territorial expansion and settlement.</p> <p>Westward migration was influenced by geography and economic opportunity.</p>	<p>The student will understand the following:</p> <p>Geographic regions—locations and physical characteristics:</p> <ul style="list-style-type: none"> -Coastal Plain -Appalachian Highlands -Canadian Shield -Interior Lowlands -Great Plains -Rocky Mountains -Basin and Range -Coastal Range <p>Major bodies of water:</p> <ul style="list-style-type: none"> -Oceans: Atlantic, Pacific -Rivers: Mississippi, Missouri, Ohio, Columbia, Colorado, Rio Grande -Lakes: Great Lakes -Gulf: Gulf of Mexico <p>New territories added to the United States after 1801:</p> <ul style="list-style-type: none"> -Louisiana Purchase -Florida -Texas -Oregon -California <p>Geographic and economic factors that influenced westward movement:</p> <ul style="list-style-type: none"> -Population growth in the eastern states -Availability of cheap, fertile land -Economic opportunity (e.g., California Gold Rush), logging, farming, freedom (for runaway slaves) -Cheaper and faster transportation (e.g., rivers and canals such as the Erie Canal), steamboats -Knowledge of overland trails (Oregon and Santa Fe) -Belief in the right of "Manifest Destiny"

VA SOL for Technology

C/T 3-5.2: The student will demonstrate proficiency in the use of technology. [Use skills and procedures needed to operate various technologies such as scanners, digital cameras, and hand-held computers.]

C/T 3-5.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively when using technology.]

C/T 3-5.8: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Use technology tools for individual and collaborative writing, communication, and publishing activities.]

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Choose the appropriate tool, format, and style to communicate information. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

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Technology Integration Strategies

Students should develop an animated slide show or digital story that tells the geographic story of America's exploration and growth. Using a base U.S. map template, each individual or group of students should use graphic software to add routes, geographic features, dates, and other important information to the map.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Exploration to Revolution: Pre-Columbian Times to the 1770s	<p>USI.3 a and b: The student will demonstrate knowledge of how early cultures developed in North America by locating where the American Indians (First Americans) settled, with emphasis on Arctic (Inuit), Northwest (Kwakiutl), Plains (Sioux), Southwest (Pueblo), and Eastern Woodland (Iroquois), and by describing how the American Indians (First Americans) used their environment to obtain food, clothing, and shelter.</p> <p>USI.1 a: The student will develop skills for historical and geographical analysis, including the ability to identify and interpret primary and secondary source documents to increase understanding of events and life in United States history to 1877.</p>	<p>Prior to the arrival of Europeans, American Indians (First Americans) were dispersed across different environments in North America.</p> <p>Geography and climate affected how various American Indian (First American) groups met their basic needs.</p>	<p>The student will understand the following:</p> <p>Inuit inhabited present-day Alaska and northern Canada. They lived in Arctic areas where the temperature is below freezing much of the year.</p> <p>Kwakiutl inhabited the Pacific Northwest coast, characterized by a rainy, mild climate.</p> <p>Sioux inhabited the interior of the United States, called the Great Plains and characterized by dry grasslands.</p> <p>Pueblo inhabited the Southwest in present-day New Mexico and Arizona, where they lived in desert areas and areas bordering cliffs and mountains.</p> <p>Iroquois inhabited northeast North America, the Eastern Woodland, which is heavily forested.</p> <p>The American Indians (First Americans) fished, hunted, and harvested crops for food. Clothing was made from animal skins and plants. Their shelter was made of resources found in their environment (e.g., sod, stones, animal skins, wood).</p>
VA SOL for Technology			
C/T 3-5.4: The student will practice responsible use of technology systems, information, and software. [Understand the need for the school division's Acceptable Use Policy. Follow rules for personal safety when using the Internet.]			
C/T 3-5.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively when using technology.]			
C/T 3-5.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Collect information from a variety of sources. Evaluate the accuracy of electronic information resources.]			
C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]			
C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology.]			
C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use the Internet and other electronic resources to locate information in real time.]			
C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]			

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Technology Integration Strategies

The teacher should introduce students to one of the five focus groups of American Indians (First Americans). Using a graphic organizer, the whole class should review what it has learned about this one group and the essential questions needed to investigate the other four groups. The students should work in small groups to find answers to their questions (and only those questions), using library resources and Web sites. They then can reflect on these questions to see if they have found enough information to understand the four other focus groups.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Exploration to Revolution: Pre-Columbian Times to the 1770s	USI.5 a and b: The student will demonstrate knowledge of the factors that shaped colonial America by describing the religious and economic events and conditions that led to the colonization of America and by comparing and contrasting life in the New England, Mid-Atlantic, and Southern colonies, with emphasis on how people interacted with their environment.	Colonies in North America were established for religious and economic reasons. Life in the colonies reflected the geographical features of the settlements.	The student will understand the following: The colonies and the reasons they were established Interactions of people and environment New England -Geography and climate (Appalachian Mountains, Boston Harbor, hilly terrain, rocky soil, jagged coastline, moderate summers, cold winters) -Economy (fishing, shipbuilding industry and naval supplies, trade and port cities, skilled craftsmen, shopkeepers) -Social life (village and church as center of life, religious reformers and separatists) -Political and civic life (town meetings) Mid-Atlantic -Geography and climate (Appalachian Mountains, coastal lowlands [harbors and bays, wide and deep rivers], rich farmlands, moderate climate) -Economy (livestock and grain, trading, unskilled and skilled workers, and fishermen) -Social life (villages and cities, varied and diverse lifestyles, diverse religions) -Political and civic life (market towns) South -Geography and climate (Appalachian Mountains, Piedmont, Atlantic Coastal Plain, good harbors, rivers, humid climate) -Economy (large farms/plantations, cash crops, wood products, small farms, slavery) -Social life (plantations [slavery], mansions, indentured servants, few cities, few schools, Church of England) -Political and civic life (counties)

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VA SOL for Technology

C/T 3-5.4: The student will practice responsible use of technology systems, information, and software. [Understand the need for the school division's Acceptable Use Policy. Follow rules for personal safety when using the Internet.]

C/T 3-5.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively when using technology.]

C/T 3-5.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Collect information from a variety of sources. Evaluate the accuracy of electronic information resources. Enter data into databases and spreadsheets.]

C/T 3-5.7: The student will use technology resources for solving problems and making informed decisions. [Select resources to solve problems and make informed decisions.]

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology.]

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use databases and spreadsheets to evaluate information. Use the Internet and other electronic resources to locate information in real time.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development of strategies for solving problems. Participate in collaborative problem-solving activities.]

Technology Integration Strategies

Teachers should pose this question to students, "Why were the 13 colonies generally divided into three geographic regions?" In small groups, students should use the Internet to research the people who came to America and settled in each colony. A database can be created for the whole class using input from the small groups and creating categories that the students determine. They can use the database to find similarities and differences among the colonies and determine geographic regions (the following are just two of the Web sites that provide information on the 13 colonies: <http://www.cybrary.org/colonial.htm> and <http://www.timepage.org/spl/13colony.html>) .

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Revolution and the New Nation: 1770s to the Early 1800s	USI.6 c: The student will demonstrate knowledge of the causes and results of the American Revolution by describing key events and the roles of key individuals in the American Revolution, with emphasis on George Washington, Benjamin Franklin, Thomas Jefferson, Patrick Henry, and Thomas Paine.	Many individuals played important roles in shaping events of the American Revolution.	<p>The student will understand the following:</p> <p>Key Individuals</p> <ul style="list-style-type: none"> -King George III: British king during the Revolutionary era -Lord Cornwallis: British general who surrendered at Yorktown -John Adams: championed the cause of independence -George Washington: commander of the Continental Army -Thomas Jefferson: major author of the Declaration of Independence -Patrick Henry: outspoken member of the House of Burgesses; inspired colonial patriotism with "Give me liberty or give me death" speech -Benjamin Franklin: prominent member of Continental Congress; helped frame the Declaration of Independence -Thomas Paine: journalist, author of Common Sense <p>Other Important Individuals</p> <ul style="list-style-type: none"> -Phillis Wheatley: former slave who wrote poems and plays supporting American independence -Paul Revere: patriot who made a daring ride to warn colonists of British arrival <p>Key Events</p> <ul style="list-style-type: none"> -Boston Massacre: colonists in Boston shot after taunting British soldiers -Boston Tea Party: Samuel Adams, Paul Revere, and other patriots throwing tea into Boston Harbor to protest tea taxes -First Continental Congress: delegates from all colonies except Georgia meeting to discuss problems with England and promote independence -Battle of Lexington and Concord: first armed conflict of the Revolutionary War -Approval of the Declaration of Independence: colonies declaring independence from England (July 4, 1776) -Battle of Saratoga: American victory and the turning point in the war -Surrender at Yorktown: colonial victory over forces of Lord Cornwallis, marking the end of the Revolutionary War -Signing of the Treaty of Paris: England recognizing American independence

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VA SOL for Technology

C/T 3-5.2: The student will demonstrate proficiency in the use of technology. [Use skills and procedures needed to operate various technologies such as scanners, digital cameras, and hand-held computers.]

C/T 3-5.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively when using technology. Practice and communicate respect for people, equipment, and resources.]

C/T 3-5.8: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Use technology tools for individual and collaborative writing, communication, and publishing activities.]

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Students should create a comic book history of the American Revolution. As a group, students would plan for how individuals will be portrayed (identifying characteristics) and how places and times will be identified to provide consistency. Using a piece of comic creation software or a drawing program, individual students or small groups should develop their episodes. The finished electronic comic book can be distributed to younger students.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Civil War and Reconstruction: 1860s to 1877	<p>USI.10 a: The student will demonstrate knowledge of the effects of Reconstruction on American life by identifying the provisions of the 13th, 14th, and 15th Amendments to the Constitution of the United States and their impact on the expansion of freedom in America.</p> <p>USI.1 a: The student will develop skills for historical and geographical analysis, including the ability to identify and interpret primary and secondary source documents to increase understanding of events and life in United States history to 1877.</p>	The 13th, 14th, and 15th Amendments to the Constitution of the United States of America address the issues of slavery and guarantee equal protection under the law for all citizens.	<p>The student will understand basic provisions of these amendments:</p> <ul style="list-style-type: none"> -13th Amendment: bans slavery in the United States and any of its territories -14th Amendment: grants citizenship to all persons born in the United States and guarantees them equal protection under the law -15th Amendment: ensures all citizens the right to vote regardless of race or color or previous condition of servitude <p>These three amendments guarantee equal protection under the law for all citizens.</p>

VA SOL for Technology

C/T 3-5.8: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Use technology tools for individual and collaborative writing, communication, and publishing activities].

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Participate in collaborative problem-solving activities.]

Technology Integration Strategies

As a class, students should use a graphic organizer to represent how the three amendments increased the total number of American citizens. The students should brainstorm which people might not be covered under these amendments.

This long-term project may assist teachers who are interested in using technology for project-based learning. It incorporates several content and technology SOL.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
United States History to 1877	<p>USI.5: The student will demonstrate knowledge of the factors that shaped colonial America by describing the religious and economic events and conditions that led to the colonization of America; by comparing and contrasting life in the New England, Mid-Atlantic, and Southern colonies, with emphasis on how people interacted with their environment; by describing colonial life in America from the perspectives of large landowners, farmers, artisans, women, indentured servants, and slaves; and by identifying the political and economic relationships between the colonies and England.</p> <p>USI.6 b: The student will demonstrate knowledge of the causes and results of the American Revolution by identifying how political ideas shaped the revolutionary movement in America and led to the Declaration of Independence, with emphasis on the ideas of John Locke.</p> <p>USI.8 b, c, and d: The student will demonstrate knowledge of westward expansion and reform in America from 1801-1861 by identifying the geographic and economic factors that influenced the westward movement of settlers; by describing the impact of inventions, including the cotton gin, the reaper, the steamboat, and the steam locomotive, on life in America; and by identifying the main ideas of the abolitionist and suffrage movements.</p> <p>USI.9 a, b, and f: The student will demonstrate knowledge of the causes, major events, and effects of the Civil War by describing the cultural, economic, and constitutional issues that divided the nation; by explaining how the issues of states' rights and slavery increased sectional tensions; and by describing the effects of war from the perspectives of Union and Confederate soldiers (including black soldiers), women, and slaves.</p> <p>USI.10 b: The student will demonstrate knowledge of the effects of Reconstruction on American life by describing the impact of Reconstruction policies on the South.</p>	<p>Colonies in North America were established for religious and economic reasons.</p> <p>Life in the colonies reflected the geographical features of the settlements.</p> <p>The colonies were made up of different groups of people whose lives varied depending on their social position.</p> <p>England established and attempted to maintain control over the colonies.</p> <p>New political ideas led to a desire for independence and democratic government in the American colonies.</p> <p>The Declaration of Independence proclaimed independence from England. It stated that people have natural (inherent) rights to life, liberty, and the pursuit of happiness.</p> <p>Westward migration was influenced by geography and economic opportunity.</p> <p>Prior to the Civil War, most industrialization in America was in the North; however, the equipment produced in the North had an impact on the farming society in the South.</p> <p>The abolitionists worked to end slavery.</p> <p>The suffrage movement helped women gain equal rights.</p> <p>Cultural, economic, and constitutional differences between the North and the South eventually resulted in the Civil War.</p> <p>The South feared that the North would take control of Congress, and Southerners began to proclaim states' rights as a means of self-protection.</p> <p>The North believed that the nation was a union and could not be divided. While the Civil War did not begin as a war to abolish slavery, issues surrounding slavery deeply divided the nation.</p> <p>Life on the battlefield and on the home front was extremely harsh. Many died from disease and exposure.</p> <p>The Reconstruction policies were harsh and created problems in the South.</p> <p>Reconstruction attempted to give meaning to the freedom that the former slaves had achieved.</p>	<p>The student will understand the following:</p> <p>Colonies and the reasons they were established</p> <p>Interactions of people and environment</p> <p>Different perspectives among large landowners, farmers, artisans, women, indentured servants, and slaves</p> <p>Economic relationships and political relationships with England, including those involving trade, taxes, and laws</p> <p>Ideas of John Locke, which influenced the Declaration of Independence</p> <p>Several geographic and economic factors that influenced westward movement</p> <p>Technological advances that changed life in both the North and the South</p> <p>Abolitionist and women's rights movements, which drew attention to those in the United States who did not have the same rights as white males</p> <p>Various factors that divided the nation into the North and South, including slavery, cultural, economic, and constitutional</p> <p>Various attempts at compromise that ultimately failed, causing the South to secede from the United States to form a new country</p> <p>Devastating effects of war on all involved, though slaves did gain freedom at the end of the war, and on the economy and the land, mainly in the South</p> <p>Reconstruction policies and problems:</p> <ul style="list-style-type: none"> -Southern military leaders could not hold office. -Southerners resented northern "carpetbaggers," who took advantage of the South during Reconstruction. -African Americans held public office. -African Americans gained equal rights as a result of the Civil Rights Act of 1866, which authorized the use of federal troops for its enforcement. -Northern soldiers supervised the South.

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VA SOL for Technology

C/T 3-5.2: The student will demonstrate proficiency in the use of technology. [Use skills and procedures needed to operate various technologies such as scanners, digital cameras, and hand-held computers.]

C/T 3-5.4: The student will practice responsible use of technology systems, information, and software. [Understand the need for the school division's Acceptable Use Policy. Discuss the rationale of fair use and copyright regulations. Follow rules for personal safety when using the Internet.]

C/T 3-5.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use the Internet and other electronic resources to locate information in real time.]

C/T 3-5.8: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Produce documents demonstrating the ability to edit, reformat, and integrate various software tools. Use technology tools for individual and collaborative writing, communication, and publishing activities.]

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate the correct use of fair use and copyright regulations. Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology.]

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use the Internet and other electronic resources to locate information in real time.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]

C/T 6-8.8: Students use technology resources for solving problems and making informed decisions. [Employ technology in the development strategies for solving problems. Use a variety of technologies to identify and provide possible solutions to real-world problems. Participate in collaborative problem-solving activities. Select and use appropriate tools and technology resources to accomplish a variety of tasks.]

C/T 6-8.9: Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Choose the appropriate tool, format, and style to communicate information. Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Throughout the year, students should create an annotated family tree about a fictional family. They should tell the story of a family that came to America with the early colonists and whose descendants lived through the Civil War (and beyond). The family tree should include realistic details about daily life and reactions to current events. The annotations may take the form of newspaper articles, legal documents, letters, photos or other images (such as newspaper illustrations), oral histories, or diary entries. Students will need to conduct research using Internet sites and other resources. Students must cite all their sources properly.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information.



HISTORY & SOCIAL SCIENCE

US History: 1877 to Present

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Geography	USII.2 c: The students will use maps, globes, photographs, pictures, and tables for locating the 50 states and the cities most significant to the historical development of the United States.	A state is an example of a political region. States may be grouped as part of different regions, depending upon the criteria used.	The student will understand that states are grouped by regions.

VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate the correct use of fair use and copyright regulations. Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology. Explore the potential of the Internet as a means of personal learning and the respectful exchange of ideas and products.]

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use databases and spreadsheets to evaluate information. Use the Internet and other electronic resources to locate information in real time.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development of strategies for solving problems. Participate in collaborative problem-solving activities.]

Technology Integration Strategies

Using the Internet, students should collect information about states (history, notable people, special features, etc.), enter the information into their own databases, and sort by differing categories to identify patterns based on regions.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Reshaping the Nation and the Emergence of Modern America: 1877 to the Early 1900s	<p>USII.3 b: The student will demonstrate knowledge of how life changed after the Civil War by explaining the reasons for the increase in immigration, growth of cities, new inventions, and challenges arising from this expansion.</p> <p>USII.1 a: The student will demonstrate skills for historical and geographical analysis, including the ability to analyze and interpret primary and secondary source documents to increase understanding of events and life in United States history from 1877 to the present.</p>	Population changes, growth of cities, and new inventions produced problems in urban areas.	The student will understand the reasons for increased immigration.

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VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate the correct use of fair use and copyright regulations. Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology.]

C/T 6-8.6: Students use technology to locate, evaluate, and collect information from a variety of sources. [Use databases and spreadsheets to evaluate information. Use the Internet and other electronic resources to locate information in real time.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development of strategies for solving problems. Participate in collaborative problem-solving activities.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Choose the appropriate tool, format, and style to communicate information. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Students should use Internet databases to research countries of origin for immigrants to America during the late 1800s and early 1900s. Using a new database, students can form hypotheses about the reasons people from different regions might have immigrated. Students should present their answers using charts and maps (the following Web site provides several data resources: <http://ocp.hul.harvard.edu/immigration/links.html#data-hist>).

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Turmoil and Change: 1890s to 1945	<p>USII.5 c: The student will demonstrate knowledge of the social, economic, and technological changes of the early twentieth century by examining art, literature, and music from the 1920s and 1930s, emphasizing Langston Hughes, Duke Ellington, and Georgia O'Keeffe and including the Harlem Renaissance.</p> <p>USII.1 a and d: The student will demonstrate skills for historical and geographical analysis, including the ability to analyze and interpret primary and secondary source documents to increase understanding of events and life in United States history from 1877 to the present; and interpret ideas and events from different historical perspectives.</p>	The 1920s and 1930s were important decades for American art, literature, and music. The leaders of the Harlem Renaissance drew upon the heritage of black culture to establish themselves as powerful forces for cultural change.	The student will understand the cultural climate of the 1920s and 1930s and the Harlem Renaissance.

VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate the correct use of fair use and copyright regulations. Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use the Internet and other electronic resources to locate information in real time.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Choose the appropriate tool, format, and style to communicate information. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

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Technology Integration Strategies

Students should gather information and data from various resources to create a Web-based museum about the Harlem Renaissance. Students must cite all their sources properly.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information; review the potential dangers and pitfalls involved with Web site creation (such as revealing too much personal information or the permanence of electronic information); and point out that information on the Internet potentially can be misused or misunderstood.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Turmoil and Change: 1890s to 1945	<p>USII.6 c: The student will demonstrate knowledge of the major causes and effects of American involvement in WWII by describing the impact of World War II on the home front.</p> <p>USII.1 a, c, d: The student will demonstrate skills for historical and geographical analysis, including the ability to analyze and interpret primary and secondary source documents to increase understanding of events and life in United States history from 1877 to the present; sequence events in United States history from 1877 to the present; and interpret ideas and events from different historical perspectives.</p>	World War II affected every aspect of American life. Americans needed to make sacrifices in support of the war effort and the ideas for which we fought.	The student will understand that thousands of American women took jobs in defense plants during the war and that Americans at home supported the war by conserving and rationing resources.

VA SOL for Technology

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology.]

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use the Internet and other electronic resources to locate information in real time.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Choose the appropriate tool, format, and style to communicate information. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Using desktop-publishing techniques, students should collaboratively create a "hometown" newspaper that covers life during the war.

This long-term project may assist teachers who are interested in using technology for project-based learning. It incorporates several content and technology SOL.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
The United States since World War II	<p>USII.7 c: The student will demonstrate knowledge of the economic, social, and political transformation of the United States and the world between the end of World War II and the present by identifying the role of America's military and veterans in defending freedom during the Cold War, including the wars in Korea and Vietnam, the Cuban missile crisis, the collapse of communism in Europe, and the rise of new challenges.</p> <p>USII.1 a, b, e: The student will demonstrate skills for historical and geographical analysis, including the ability to analyze and interpret primary and secondary source documents to increase understanding of events and life in United States history from 1877 to the present; make connections between past and present; and evaluate and debate issues orally and in writing.</p>	The Cold War was the central organizing principle in foreign affairs for 40 years.	The student will understand the origins of the Cold War, major conflicts in the post-World War II era, the collapse of communism in Europe, and new challenges (global issues).

VA SOL for Technology

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology. Explore the potential of the Internet as a means of personal learning and the respectful exchange of ideas and products.]

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use the Internet and other electronic resources to locate information in real time.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development strategies for solving problems. Use a variety of technologies to identify and provide possible solutions to real-world problems. Participate in collaborative problem-solving activities. Select and use appropriate tools and technology resources to accomplish a variety of tasks.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Choose the appropriate tool, format, and style to communicate information. Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Teachers should pose these problems to the students: Is the Cold War truly over, or have we just had a lull? How does this answer affect U.S. defense strategies today? Using the Internet to research past and current events, students should work in small cooperative groups to answer these questions. Students can present their conclusions using presentation software.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information; review the potential dangers and pitfalls involved with e-mail communications and Web site creation (such as lack of visual signals, revealing too much personal information, or the permanence of electronic information); and discuss the potential dangers of cyberbullying that can occur when people have strong opinions about topics.



HISTORY & SOCIAL SCIENCE

Civics and Economics

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Civics	<p>CE.2 a: The students will demonstrate knowledge of the foundations of American constitutional government by explaining the fundamental principles of consent of the governed, limited government, rule of law, democracy, and representative government.</p> <p>CE.1 a: The student will develop the social studies skills citizenship requires, including the ability to examine and interpret primary and secondary source documents.</p>	Fundamental political principles define and shape American constitutional government.	<p>The student will understand the following fundamental political principles:</p> <ul style="list-style-type: none"> -Consent of the governed -Limited government -Rule of law -Democracy -Representative government

VA SOL for Technology

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology.]

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use the Internet and other electronic resources to locate information in real time.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development strategies for solving problems. Use a variety of technologies to identify and provide possible solutions to real-world problems. Participate in collaborative problem-solving activities. Select and use appropriate tools and technology resources to accomplish a variety of tasks.]

Technology Integration Strategies

Students should visit Web sites to access documents used by the founding fathers when developing the United States' new form of government and determine which parts of these documents were incorporated into the U.S. Constitution (the following Web site provides several documents related to the U.S. Constitution: <http://www.yale.edu/lawweb/avalon/constpap.htm>).

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Civics and Economics	<p>CE.2 c: The student will demonstrate knowledge of the foundations of American constitutional government by identifying the purposes for the Constitution of the United States of America as they are stated in its Preamble.</p> <p>CE.11 b and c: The student will demonstrate knowledge of the role of government in the United States economy by explaining the creation of public goods and services; and describing the impact of taxation, including an understanding of the reasons for the 16th Amendment.</p> <p>CE.1 a and g: The student will develop the social studies skills citizenship requires, including the ability to examine and interpret primary and secondary source documents; and select and defend positions in writing, discussion, and debate.</p>	<p>The preamble of a constitution sets forth the goals and purposes to be served by the government.</p> <p>Government provides public goods and services that individuals acting alone could not provide efficiently.</p>	<p>The student will understand the following:</p> <p>The Preamble to the Constitution of the United States of America expresses the reasons the constitution was written.</p> <p>The purposes of U.S. government are to form a union; to establish justice; to ensure domestic peace; and to provide defense.</p> <p>Public goods and services include such items as interstate highways, the postal service, and national defense. They provide benefits to many simultaneously and would not be available if individuals had to provide them.</p> <p>Governments produce public goods and services through tax revenue and borrowed funds.</p>

VA SOL for Technology

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology.]

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use the Internet and other electronic resources to locate information in real time.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information.]

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development strategies for solving problems. Use a variety of technologies to identify and provide possible solutions to real-world problems. Participate in collaborative problem-solving activities. Select and use appropriate tools and technology resources to accomplish a variety of tasks.]

Technology Integration Strategies

Students should examine a copy of the Constitution of the United States and determine the “job” of the government. They will then determine how the government is able to do its job. The students should compile a list of federally funded programs and governmental agencies that are used locally. Students can examine and match these programs and agencies with a specific constitutional government responsibility. The students should research how much of the federal tax base supports these programs. In small groups, students should debate these programs to determine whether or not they effectively help the government do its job.

Internet Safety: Remind students that they must follow the division’s Acceptable Use Policy and that not all Web sites contain truthful and accurate information; review the potential dangers and pitfalls involved with e-mail communications and Web site creation (such as lack of visual signals, revealing too much personal information, or the permanence of electronic information); and discuss the potential dangers of cyberbullying that can occur when people have strong opinions about topics.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Civics	<p>CE.3 b: The student will demonstrate knowledge of citizenship and the rights, duties, and responsibilities of citizens by describing the First Amendment freedoms of religion, speech, press, assembly, and petition, and the rights guaranteed by due process and equal protection of the laws.</p> <p>CE.1 d: The student will develop the social studies skills citizenship requires, including the ability to distinguish between relevant and irrelevant information.</p>	The Constitution of the United States of America establishes and protects the citizens' fundamental rights and liberties.	The student will understand that First Amendment freedoms include religion, speech, press, assembly, and petition.

VA SOL for Technology

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology.]

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use the Internet and other electronic resources to locate information in real time.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Choose the appropriate tool, format, and style to communicate information. Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Students should research a current issue that challenges one of the First Amendment freedoms. They can use a Web page, PowerPoint presentation, or digital story to communicate this challenge without using words (the following Web site is a helpful resource for identifying current challenges: <http://www.firstamendmentcenter.org/>).

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information; review the potential dangers and pitfalls involved with Web site creation (such as revealing too much personal information or the permanence of electronic information); review the issues involved with altering electronic images; and point out that information on the Internet potentially can be misused or misunderstood.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Civics	<p>CE.3 d: The student will demonstrate knowledge of citizenship and the rights, duties, and responsibilities of citizens by examining the responsibilities of citizenship, including registering and voting, communicating with government officials, participating in political campaigns, keeping informed about current issues, and respecting differing opinions in a diverse society.</p> <p>CE.1 f and g: The student will develop the social studies skills citizenship requires, including the ability to identify a problem and recommend solutions; and select and defend positions in writing, discussion, and debate.</p>	A basic responsibility of citizenship is to contribute to the common good.	<p>The student will understand that responsibilities of citizens include the following:</p> <ul style="list-style-type: none"> -Register and vote -Hold elective office -Influence government by communicating with government officials -Serve in voluntary, appointed positions -Participate in political campaigns -Keep informed regarding current issues -Respect others' rights to an equal voice in government.

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VA SOL for Technology

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology.]

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use the Internet and other electronic resources to locate information in real time.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Choose the appropriate tool, format, and style to communicate information. Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Working in groups, students should use various electronic resources to investigate problems that keep citizens from participating fully in their government. They should develop a solution and make a multimedia presentation to a local group of citizens.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Civics	<p>CE.5 c: The student will demonstrate knowledge of the political process at the local, state, and national levels of government by analyzing campaigns for elective office, with emphasis on the role of the media.</p> <p>CE.1 c and e: The student will develop the social studies skills citizenship requires, including the ability to analyze political cartoons, political advertisements, pictures, and other graphic media; and review information for accuracy, separating fact from opinion.</p>	Voters evaluate information presented in political campaigns to make reasoned choices among candidates.	The student will understand strategies for evaluating campaign speeches, literature, and advertisements for accuracy, including separating fact from opinion, detecting bias, evaluating sources, and identifying propaganda.

VA SOL for Technology

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology.]

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use the Internet and other electronic resources to locate information in real time.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]

Technology Integration Strategies

Students should examine Web sites presented by various candidates for an office. They should determine how the sites are organized and how the information is presented, compared to traditional media coverage. They should compare the information on these sites to Web sites that claim to be created by unbiased observers or evaluators.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information; review the potential dangers of cyberbullying that occur when people have strong opinions about topics; and point out how persuasive techniques are used on the Internet.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Civics	<p>CD.6 a: The student will demonstrate knowledge of the American constitutional government by explaining the relationship of state governments to the national government in the federal system.</p> <p>CE.1 b: The student will develop the social studies skills citizenship requires, including the ability to create and explain maps, diagrams, tables, charts, graphs, and spreadsheets.</p>	The Constitution of the United States of America establishes the principle of federalism, which is the division of power between the states and the national government.	<p>The student will understand the following:</p> <p>The powers of the national government are either enumerated/expressed or implied in the Constitution of the United States of America.</p> <p>The powers not given to the national government by the Constitution of the United States of America are reserved for the states.</p> <p>The Constitution of the United States of America denies powers to both the national and state governments.</p>

VA SOL for Technology

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology.]

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development of strategies for solving problems. Use a variety of technologies to identify and provide possible solutions to real-world problems. Participate in collaborative problem-solving activities. Select and use appropriate tools and technology resources to accomplish a variety of tasks.]

Technology Integration Strategies

Using graphic software, students should create a chart that shows which levels of government (national, state, and local) hold which powers and responsibilities. Other students should test the usefulness of the chart by finding local issues in their newspapers and then determining the provenance for those issues (for example, who do you contact if you want to protect trees in a neighborhood, to get a stretch of road paved, or to complain about airport noise?).

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Economics	CE.9 a: The student will demonstrate knowledge of how economic decisions are made in the marketplace by applying the concepts of scarcity, resources, choice, opportunity cost, price, incentives, supply and demand, production, and consumption.	People make choices about how to use limited resources, decide the ownership of resources, and structure markets for the distribution of goods and services.	The student will understand these terms: scarcity, resources, choice, opportunity cost, price, incentives, supply and demand, production, and consumption.

VA SOL for Technology

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development of strategies for solving problems. Use a variety of technologies to identify and provide possible solutions to real-world problems. Use content-specific tools, software, and simulations such as environmental probes, graphic calculators, exploratory environments, and Web tools.]

Technology Integration Strategies

Students should use simulation software or Web sites to apply their knowledge of economic concepts to various scenarios. (Several simulation software packages are available, and several gaming sites on the Web focus on economic simulations.)

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy. Be aware that gaming Web sites often have advertisements. Remind students about school policies and safety issues related to advertising. Students will also need to protect their privacy on such sites.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Economics	<p>CE.9 b: The student will demonstrate knowledge of how economic decisions are made in the marketplace by comparing the differences among free market, command, and mixed economies.</p> <p>CE.1 a and b: The student will develop the social studies skills citizenship requires, including the ability to examine and interpret primary and secondary source documents; and create and explain maps, diagrams, tables, charts, graphs, and spreadsheets.</p>	The type of economy is determined by the extent of government involvement in economic decision making.	The student will understand the characteristics of the major economic systems: free market, command, and mixed.

VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate the correct use of fair use and copyright regulations. Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use databases and spreadsheets to evaluate information. Use the Internet and other electronic resources to locate information in real time.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]

Technology Integration Strategies

Students should use the Internet to research the types of economy, government, and poverty levels of various countries around the world. They should determine what patterns, if any, can be seen in the data (the following are examples of data sites: http://pwt.econ.upenn.edu/php_site/pwt_index.php and <http://www.worldbank.org/>).

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Economics	CE.10 d: The student will demonstrate knowledge of the structure and operation of the United States economy by examining the relationship of Virginia and the United States to the global economy, with emphasis on the impact of technological innovations.	Virginia and the United States pursue international trade in order to increase wealth.	The student will understand that innovations in technology (e.g., the Internet) contribute to the global flow of information, capital, goods, and services and that the use of such technology also lowers the cost of production.

VA SOL for Technology

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology.]

C/T 6-8.8: The student will use technology resources for solving problems and making informed decisions. [Employ technology in the development of strategies for solving problems. Use a variety of technologies to identify and provide possible solutions to real-world problems. Participate in collaborative problem-solving activities. Select and use appropriate tools and technology resources to accomplish a variety of tasks.]

Technology Integration Strategies

Students should brainstorm in small groups and use graphic organizers to show the effects (positive and negative) of globalization and new technologies on local businesses and national businesses.

This long-term project may assist teachers who are interested in using technology for project-based learning. It incorporates several content and technology SOL.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Economics	<p>CE.9 a: The student will demonstrate knowledge of how economic decisions are made in the marketplace by applying the concepts of scarcity, resources, choice, opportunity cost, price, incentives, supply and demand, production, and consumption.</p> <p>CE.10 a and d: The student will demonstrate knowledge of the structure and operation of the United States economy by describing the types of business organizations and the role of entrepreneurship and by examining the relationship of Virginia and the United States to the global economy, with emphasis on the impact of technological innovations.</p> <p>CE.11 a: The student will demonstrate knowledge of the role of government in the United States economy by examining competition in the marketplace.</p> <p>CE.12 d: The student will demonstrate knowledge of career opportunities by examining the impact of technological change on career opportunities.</p> <p>CE.1 a, b, d and e: The student will develop the social studies skills citizenship requires, including the ability to examine and interpret primary and secondary sources; create and explain maps, diagrams, tables, charts, graphs, and spreadsheets; distinguish between relevant and irrelevant information; and review information for accuracy, separating fact from opinion.</p>	<p>People make choices about how to use limited resources, decide the ownership of resources, and structure markets for the distribution of goods and services.</p> <p>Changes in technology influence the abilities, skills, and education needed in the marketplace.</p> <p>The government promotes and regulates competition.</p> <p>Changes in technology influence the abilities, skills, and education needed in the marketplace.</p>	<p>The student will understand the following:</p> <p>Resources are factors of production that are used in the production of goods and services. Types of resources are natural, human, capital, and entrepreneurship. Incentives are things that incite or motivate. Incentives are used to change economic behavior.</p> <p>Interaction of supply and demand determines price. Demand is the amount of a good or service that consumers are willing and able to buy at a certain price. Supply is the amount of a good or service that producers are willing and able to sell at a certain price.</p> <p>Production is the combining of human, natural, capital, and entrepreneurship resources to make goods or provide services. Resources available and consumer preferences determine what is produced.</p> <p>Government agencies that regulate business:</p> <ul style="list-style-type: none"> - FCC (Federal Communications Commission) - EPA (Environmental Protection Agency) - FTC (Federal Trade Commission) <p>Employers seek individuals who have kept pace with technological change/skills.</p> <p>Technological advancements create new jobs in the workplace.</p>

VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology.]

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use the Internet and other electronic resources to locate information in real time.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]

C/T 6-8.8: Students use technology resources for solving problems and making informed decisions. [Employ technology in the development of strategies for solving problems. Use a variety of technologies to identify and provide possible solutions to real-world problems. Participate in collaborative problem-solving activities. Select and use appropriate tools and technology resources to accomplish a variety of tasks.]

C/T 6-8.9: Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Choose the appropriate tool, format, and style to communicate information. Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

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Technology Integration Strategies
<p>As a yearlong project, students should poll their families and residents of their community to determine the types of jobs available over the past 10, 20, 30, 40, and 50 years. They should then use the Internet to research the types of careers currently available in their community. Further interviews with business and civic leaders will help them determine what jobs are projected to be available in the future. This data should be compared to data for the state and the nation as a whole (information can be found in electronic databases). All information can be presented to the larger school community, using a multimedia format as chosen by the students.</p> <p>Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information; review the potential dangers and pitfalls involved with e-mail communications (such as lack of visual signals, revealing too much personal information, or the permanence of electronic information).</p>



HISTORY & SOCIAL SCIENCE

World History and Geography to 1500 A.D.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Era 1: Human Origins and Early Civilizations: Prehistory to 1000 B.C.	<p>WHI.2 d: The student will demonstrate knowledge of early development of humankind from the Paleolithic Era to the agricultural revolution by explaining how archaeological discoveries are changing present-day knowledge of early peoples.</p> <p>WHI.1 a: The student will improve skills in historical research and geographical analysis by identifying, analyzing, and interpreting primary and secondary sources to make generalizations about events and life in world history to 1500 A.D.</p>	Archaeologists continue to find and interpret evidence of early humans and their lives.	The student will understand that archaeologists study past cultures by locating and analyzing human remains, fossils, and artifacts.

VA SOL for Technology

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Choose the appropriate tool, format, and style to communicate information. Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Using library resources, students should choose a recent archaeological discovery about a time period prior to 1500 A.D. Using appropriate software, they should develop an illustration showing before-and-after views of the past. The “before” view will illustrate what used to be believed about a particular group of people; the “after” will show the revised view of these people, based on the new research.

Internet Safety: Remind students that they must follow the division’s Acceptable Use Policy and that not all Web sites contain truthful and accurate information; point out that information on the Internet potentially can be misused or misunderstood.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Era 1: Human Origins and Early Civilizations: Prehistory to 1000 B.C.	<p>WHI.3 a, b, c, and e: The student will demonstrate knowledge of the ancient river valley civilizations, including Egypt, Mesopotamia, the Indus River Valley, and China, and the civilizations of the Hebrews, Phoenicians, and Kush by locating these civilizations in time and place; describing the development of social, political, and economic patterns, including slavery; explaining the development of religious traditions; and explaining the development of language and writing.</p> <p>WHI.1 a, b, and c: The student will improve skills in historical research and geographical analysis by identifying, analyzing, and interpreting primary and secondary sources to make generalizations about events and life in world history to 1500 A.D.; using maps, globes, artifacts, and pictures to analyze the physical and cultural landscapes of the world and interpret the past to 1500 A.D.; and identifying major geographic features important to the study of world history to 1500 A.D.</p>	<p>During the New Stone Age, permanent settlements appeared in river valleys and around the Fertile Crescent. River valleys were the “Cradles of Civilization.”</p> <p>Early civilizations made major contributions to social, political, and economic progress.</p> <p>Religion was a major part of life in all early civilizations.</p> <p>Language and writing were important cultural innovations.</p>	<p>The student will understand the river valley civilizations:</p> <p>Egyptian—Nile River Valley and Delta (Africa)</p> <p>Mesopotamian—Tigris and Euphrates River Valleys (Southwest Asia)</p> <p>Indian—Indus River Valley (South Asia)</p> <p>Chinese—Huang He Valley (East Asia)</p> <p>Other early civilizations: Hebrews (between the Mediterranean Sea and the Jordan River Valley [part of the Fertile Crescent in Southwest Asia])</p>

VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate the correct use of fair use and copyright regulations. Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Choose the appropriate tool, format, and style to communicate information. Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Working in small groups, students should choose one of the early civilizations, research all aspects of the topic, and create “snapshots” of this civilization, using various types of software, scanners, the Internet, etc. Snapshots might include “a view from a window,” “the faithful,” “a long day's work,” and related topics. The other groups will examine the snapshots and try to determine which civilization is being portrayed.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information. Also review issues involved with altering electronic images.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Era II: Classical Civilizations and Rise of Religious Traditions, 1000 B.C. to 500 A.D.	<p>WHI.4 d and f: The student will demonstrate knowledge of the civilizations of Persia, India, and China, in terms of chronology, geography, social structures, government, economy, religion, and contributions to later civilizations by describing the origins, beliefs, traditions, customs and spread of Buddhism and by describing the impact of Confucianism, Taoism, and Buddhism.</p> <p>WHI.1 e: The student will improve skills in historical research and geographical analysis by analyzing trends in human migration and cultural interaction from prehistory to 1500 A.D.</p>	<p>Buddhism was founded by Siddhartha Gautama in a part of India that is in present-day Nepal.</p> <p>Buddhism became a major faith when Asoka sent missionaries throughout Asia.</p> <p>Chinese culture began around 1500 B.C. Of Chinese contributions to civilization, Confucianism and Taoism are among the most noted.</p>	The student will understand that Asoka's missionaries and their writings spread Buddhism from India to China and other parts of Asia and that Confucianism and Taoism contributed to the formation of social order, culture, and values of the early Chinese culture.

VA SOL for Technology

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Choose the appropriate tool, format, and style to communicate information. Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

As a whole class, students should create a visual organizer to help categorize the contributions of Confucianism, Taoism, and Buddhism to early and later civilizations.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Era II: Classical Civilizations and Rise of Religious Traditions, 1000 B.C. to 500 A.D.	<p>WHI.5 f: The student will demonstrate knowledge of ancient Greece in terms of its impact on Western civilization by citing contributions in drama, poetry, history, sculpture, architecture, science, mathematics, and philosophy, with emphasis on Socrates, Plato, and Aristotle.</p> <p>WHI.6 j: The student will demonstrate knowledge of ancient Rome from about 700 B.C. to 500 A.D. in terms of its impact on Western civilization by citing contributions in art and architecture, technology and science, medicine, literature and history, language, religious institutions, and law.</p> <p>WHI.1 e: The student will improve skills in historical research and geographical analysis by analyzing trends in human migration and cultural interaction from prehistory to 1500 A.D.</p>	<p>Many of Western civilization's symbols, metaphors, words, and idealized images come from ancient Greece and ancient Roman mythology.</p> <p>Classical Athens developed a democratic system, further developed by the Roman Republic, that is the foundation of modern democracies.</p> <p>Athenian culture, during the Classic Era, became one of the foundation stones of Western civilization.</p> <p>Western civilization was influenced by the cultural achievements of Rome.</p>	<p>The student will understand that Greek and Roman gods and goddesses provide symbols and images used in Western literature, art, monumental architecture, and politics.</p> <p>Contributions of Greek culture to Western civilization:</p> <ul style="list-style-type: none"> -Drama—Aeschylus, Sophocles -Poetry—Homer -History—Herodotus, Thucydides -Sculpture—Phidias -Architecture—types of columns -Science—Archimedes, Hippocrates -Mathematics—Euclid, Pythagoras -Philosophy—Socrates, Plato, Aristotle <p>Contributions of ancient Rome:</p> <ul style="list-style-type: none"> -Art/Architecture—Pantheon, Coliseum, Forum -Technology—roads, aqueducts, Roman arches -Science—Ptolemy -Medicine—public health emphasis, medical schools -Language—Latin, Romance languages -Literature—Virgil -Religion—Roman mythology, Christianity as imperial religion -Law—principle of “innocent until proven guilty”

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VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate the correct use of fair use and copyright regulations. Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Choose the appropriate tool, format, and style to communicate information. Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Working in small groups, students should investigate one area of Western civilization that was influenced by the Greek or Roman cultures. They can create a short documentary video to summarize their findings. Videos can be displayed at a film festival for parents.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Era III: Post-Classical Civilizations, 500 to 1000 A.D.	WHI.7 d: The student will demonstrate knowledge of the Byzantine Empire and Russia from about 300 to 1000 A.D. by explaining disputes that led to the split between the Roman Catholic Church and the Greek Orthodox Church.	The cultural and political differences between the eastern and western Roman Empire weakened the unity of the Christian Church and led to its division.	<p>The student will understand the differences between the Eastern and Western Christian Churches:</p> <p>Eastern Church:</p> <ul style="list-style-type: none"> -Centered in Constantinople -Close to seat of power after Constantinople became capital -Use of Greek language in the liturgy <p>Western Church:</p> <ul style="list-style-type: none"> -Centered in Rome -Farther from the seat of power after Constantinople became capital -Use of Latin in the liturgy <p>Division between Western and Eastern Churches:</p> <ul style="list-style-type: none"> -Authority of the Pope eventually accepted in the West -Practices such as celibacy eventually accepted in the West

VA SOL for Technology

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Students should use word-processing software to write letters among Western and Eastern Christian Church leaders explaining their points of view relating to the disputes that split the Roman Catholic and Greek Orthodox churches.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Era III: Post-Classical Civilizations, 500 to 1000 A.D.	<p>WHI.9 d: The student will demonstrate knowledge of Western Europe during the Middle Ages from about 500 to 1000 A.D. in terms of its impact on Western civilization by sequencing events related to the invasions, settlements, and influence of migratory groups, including Angles, Saxons, Magyars, and Vikings.</p> <p>WHI.1 d: The student will improve skills in historical research and geographical analysis by identifying and comparing political boundaries with the location of civilizations, empires, and kingdoms from 4000 B.C. to 1500 A.D.</p>	Invasions by Angles, Saxons, Magyars, and Vikings disrupted the social, economic, and political order of Europe.	<p>The student will understand areas of settlement in Western Europe during the Middle Ages:</p> <p>Angles and Saxons from continental Europe to England</p> <p>Magyars from central Asia to Hungary</p> <p>Vikings from Scandinavia to Russia</p>

VA SOL for Technology

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Using drawing software, students should create a series of maps to show the invasions and settlement patterns of Western Europe. They can develop animations or slide shows using these maps to portray the dynamics of the movements. A modern political map can be superimposed on the last settlement map to reinforce various cultural influences that still exist today.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information; point out that information on the Internet potentially can be misused or misunderstood.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Era IV: Regional Interactions, 1000 to 1500 A.D.	<p>WHI.10 d: The student will demonstrate knowledge of civilizations and empires of the Eastern Hemisphere and their interactions through regional trade patterns by describing east African kingdoms of Axum and Zimbabwe and west African civilizations of Ghana, Mali, and Songhai in terms of geography, society, economy, and religion.</p> <p>WHI.1 d: The student will improve skills in historical research and geographical analysis by identifying and comparing political boundaries with the location of civilizations, empires, and kingdoms from 4000 B.C. to 1500 A.D.</p>	<p>African civilizations developed in sub-Saharan west and east Africa.</p> <p>Trade brought important economic, cultural, and religious influences to African civilizations from other parts of the Eastern Hemisphere.</p> <p>States and empires flourished in Africa during the medieval period, including Ghana, Mali, and Songhai in west Africa; Axum in east Africa; and Zimbabwe in southern Africa.</p>	<p>The student will understand the African civilizations of Axum, Zimbabwe, Ghana, Mali, and Songhai:</p> <p>Axum</p> <ul style="list-style-type: none"> -Location relative to the Ethiopian Highlands and the Nile River -Christian kingdom <p>Zimbabwe</p> <ul style="list-style-type: none"> -Location relative to the Zambezi and Limpopo rivers and the Indian Ocean coast -City of "Great Zimbabwe" as capital of a prosperous empire <p>West African Kingdoms</p> <ul style="list-style-type: none"> -Location of Ghana, Mali, and Songhai empires relative to Niger River and the Sahara -Importance of gold and salt to trans-Saharan trade -City of Timbuktu as center of trade and learning -Role of animism and Islam

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VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate the correct use of fair use and copyright regulations. Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.]

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Choose the appropriate tool, format, and style to communicate information. Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

Students should work in small groups to develop a class Web site of a clickable map of Africa. The map should highlight the ancient civilizations, giving details when a user selects appropriate icons. Students must cite all resources properly.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information; review the potential dangers and pitfalls involved with Web site creation (such as revealing too much personal information or the permanence of electronic information); and point out that information on the Internet potentially can be misused or misunderstood.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
Era IV: Regional Interactions, 1000 to 1500 A.D.	<p>WHI.13 c: The student will demonstrate knowledge of developments leading to the Renaissance in Europe in terms of its impact on Western civilization by citing artistic, literary, and philosophical creativity, as contrasted with the Medieval period, including Leonardo da Vinci, Michelangelo, and Petrarch.</p> <p>WHI.1 a: The student will improve skills in historical research and geographical analysis by identifying, analyzing, and interpreting primary and secondary sources to make generalizations about events and life in world history to 1500 A.D.</p>	The Renaissance produced new ideas that were reflected in the arts, philosophy, and literature. Patrons, wealthy from newly expanded trade, sponsored works that glorified city-states in northern Italy. Education became increasingly secular.	<p>The student will understand that Medieval art and literature focused on the Church and salvation and that Renaissance art and literature focused on individuals and worldly matters, along with Christianity.</p> <p>Humanism:</p> <ul style="list-style-type: none"> -Celebrated the individual -Stimulated the study of Greek and Roman literature and culture -Supported by wealthy patrons

VA SOL for Technology

C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate the correct use of fair use and copyright regulations.]

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of resources. [Use the Internet and other electronic resources to locate information in real time.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information.]

Technology Integration Strategies

Students should use the Internet to view paintings by Leonardo da Vinci and Michelangelo. They should choose one painting to represent the Renaissance, include a citation for where they found the painting, and explain their reasoning.

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This long-term project may assist teachers who are interested in using technology for project-based learning. It incorporates several content and technology SOL.

VA SOL Strand for Content	VA SOL for Content	VA SOL Essential Understanding	VA SOL Essential Knowledge
<p>Era 1: Human Origins and Early Civilizations: Prehistory to 1000 B.C.</p> <p>Era II: Classical Civilizations and Rise of Religious Traditions, 1000 B.C. to 500 A.D.</p> <p>Era III: Post-Classical Civilizations, 500 to 1000 A.D.</p>	<p>WHI.1 a: The student will improve skills in historical research and geographical analysis by identifying, analyzing, and interpreting primary and secondary sources to make generalizations about events and life in world history to 1500 A.D.</p> <p>WHI.4 c, d, and f: The student will demonstrate knowledge of the civilizations of Persia, India, and China in terms of chronology, geography, social structures, government, economy, religion, and contributions to later civilizations by describing the origins, beliefs, traditions, customs, and spread of Hinduism; describing the origins, beliefs, traditions, customs, and spread of Buddhism; and describing the impact of Confucianism, Taoism, and Buddhism.</p> <p>WHI.6 h and i: The student will demonstrate knowledge of ancient Rome from about 700 B.C. to 500 A.D. in terms of its impact on Western civilization by describing the origin, beliefs, traditions, customs, and spread of Christianity and explaining the development and significance of the Church in the late Roman Empire.</p> <p>WHI.8 a: The student will demonstrate knowledge of Islamic civilization from about 600 to 1000 A.D. by describing the origin, beliefs, traditions, customs, and spread of Islam.</p> <p>WHI.10 c and d: The student will demonstrate knowledge of civilizations and empires of the Eastern Hemisphere and their interactions through regional trade patterns by describing Japan, with emphasis on the impact of Shinto and Buddhist traditions and the influence of Chinese culture, and describing east African kingdoms of Axum and Zimbabwe and west African civilizations of Ghana, Mali, and Songhai in terms of geography, society, economy, and religion.</p>	<p>Hinduism was an important contribution of classical India. Hinduism influenced Indian society and culture and is still practiced in India today.</p> <p>Buddhism was founded by Siddhartha Gautama in a part of India that is in present-day Nepal. Buddhism became a major faith when Asoka sent missionaries throughout Asia.</p> <p>Of Chinese contributions to civilization, Confucianism and Taoism are among the most noted.</p> <p>The followers of Jesus spread Christianity throughout the Roman Empire.</p> <p>The revelations of Muhammad form the basis of the Islamic religion, a monotheistic faith. Muhammad and his followers spread Islam. Islamic traditions and customs developed over centuries and created a distinct Muslim culture.</p> <p>Shinto and Buddhism coexisted as religious traditions in the Japanese culture.</p>	<p>The student will understand the following about major Eastern Hemisphere religions:</p> <p>Hinduism:</p> <ul style="list-style-type: none"> -Belief in many forms of one major deity -Reincarnation: cycles of rebirth -Karma: future reincarnation based on present behavior -Vedas and Upanishads: sacred writings <p>Buddhism:</p> <ul style="list-style-type: none"> -Founder: Siddhartha Gautama (Buddha) -Four Noble Truths -Eightfold Path to Enlightenment <p>Origins of Christianity:</p> <ul style="list-style-type: none"> -Had its roots in Judaism -Was led by Jesus of Nazareth, who was proclaimed the Messiah -Conflicted with polytheistic beliefs of Roman Empire <p>Beliefs, traditions, and customs of Christianity:</p> <ul style="list-style-type: none"> -Monotheism -Jesus as both Son and incarnation of God -Life after death -New Testament, containing accounts of the life and teachings of Jesus as well as writings of early Christians -Christian doctrine established by early church councils <p>Origins of Islam:</p> <ul style="list-style-type: none"> -Muhammad, the Prophet -Mecca and Medina on the Arabian Peninsula: early Muslim cities <p>Beliefs, traditions, and customs of Islam:</p> <ul style="list-style-type: none"> -Monotheism (Allah, Arabic word for "God") -Quran (Koran): the Word of God -Five pillars of Islam -Acceptance of Judeo-Christian prophets, including Moses and Jesus <p>Shinto:</p> <ul style="list-style-type: none"> -Ethnic religion unique to Japan -Importance of natural features, forces of nature, and ancestors -State religion; worshipping the Emperor -Coexistence with Buddhism <p>African kingdoms:</p> <ul style="list-style-type: none"> -Role of animism and Islam

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C/T 6-8.4: The student will practice responsible use of technology systems, information, and software. [Demonstrate the correct use of fair use and copyright regulations.]

C/T 6-8.5: The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity. [Work collaboratively and/or independently when using technology. Explore the potential of the Internet as a means of personal learning and the respectful exchange of ideas and products.]

C/T 6-8.6: The student will use technology to locate, evaluate, and collect information from a variety of sources. [Use databases and spreadsheets to evaluate information. Use the Internet and other electronic resources to locate information in real time.]

C/T 6-8.7: The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. [Use search strategies to retrieve information. Evaluate the accuracy, relevance, and appropriateness of electronic information sources.]

C/T 6-8.9: The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences. [Choose the appropriate tool, format, and style to communicate information. Independently use technology tools to create and communicate for individual and/or collaborative projects. Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.]

Technology Integration Strategies

As a yearlong project, students should regularly update a database containing information about the world's religions. Using their choice of software or other technology devices, the students should create their own short study guides to help understand the differences and similarities of the religions. They should use various graphic devices and design elements to enhance their retention of information. All references must be cited properly.

Internet Safety: Remind students that they must follow the division's Acceptable Use Policy and that not all Web sites contain truthful and accurate information.